SEP 6 1924

Medical Lib.

This Issue Exceeds 85,000 Copies

THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 83, No. 10 | 535 North Dearborn Street, CHICAGO, ILL. | SEPTEMBER 6, 1924

CONTENTS AND SUBJECT INDEX

Diabetic Problem of Today. Elliott P. Joslin, M.D., Boston.....727

Hyperinsulinism and Dysinsulinism. Seale Harris, M.D., Birmingham, Ala. 729

"Optimal" Diets for Diabetic Patients. Russell M. Wilder, M.D., Rochester, Minn. 733

Papers of Drs. Joslin, Harris and Wilder discussed by Drs. Petren, Boothby, Duffie, Harris, Logefeil, McKerrihan, Wilder and Joslin.

The Traumatic Neurosis. Milton B. Lennon, M.D., San Francisco.....738

Discussed by Drs. Booth, Hourigan, Jones, Patrick, Solomon, Leeming, Kauffman and Lennon.

Spectroscopic and Chemical Demonstrations of Occult Blood in the Feces. Charles D. Aaron, M.D., Detroit..741

Discussed by Drs. Albert and Aaron.

Congenital Arteriovenous Fistula: An Embryologic Study, with Report of Case. William Francis Rienhoff, Jr., M.D., Baltimore.....743

Discussed by Drs. Brooks and Rienhoff.

Tuberculosis of the Knee: The Importance of Diagnosis. Nathaniel Allison, M.D., Boston.....750

Discussed by Drs. Ryerson, Henderson and Allison.

Abdominal Binder as a Substitute for Pituitary Extract in Second Stage of Labor. Alfred C. Beck, M.D., Brooklyn 753

Discussed by Drs. Van Hoosen, Gardiner, Graber and Beck.

Resuscitation After Electrical Shock. Wills Maclachlan, B.A.Sc., Toronto, Ont. 756

Resuscitation from Carbon Monoxid Asphyxia, from Ether or Alcohol Intoxication, and From Respiratory Failure Due to Other Causes. Yandell Henderson, Ph.D., New Haven, Conn. 758

Papers of Mr. Maclachlan and Dr. Henderson discussed by Mr. Scott, Dr. Guthrie, Dr. Wilms, Mr. Maclachlan and Dr. Henderson.

Artificial Respiration in Electric Shock and Gas Poisoning. Cecil K. Drinker, M.D., Boston.....764

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Parinaud's Infectious Conjunctivitis. E. A. Waldeck, M.D., Milwaukee..765

The Presence of Hymenolepis Nana in Porto Rico. Rolla B. Hill, M.D., and Augustin Sanchez, M.D., San Juan, Porto Rico.....766

Treatment of Pruritus Ani, Vulvae and Scroti. M. P. Moorer, M.D., Asheville, N. C.....766

EDITORIALS

The Fate of Morphin in the Body..768

Adequate Versus Optimal Nutrition.768

Aeroplanes in Medical Service.....769

The Suprarenals in Hypoglycemia..770

CURRENT COMMENT

The Locomotion of the Lymphocytes.771

Evidence That Insulin Does Not Promote Fermentation.....771

Heat Production Through Suprarenal Secretion 771

(Subject Index on next page)

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

Copyright, 1924, by the American Medical Association

S

Bulletin

YOUR DIABETIC PATIENTS

One of the great problems of practice is to get your patients to do what you tell them to do. This is particularly important in diabetic cases.

You will find **Wilder, Foley and Ellithorpe's Diabetic Primer** in the hands of your patients a great help to you—and to them. Many physicians are ordering this work in lots of six or more to give to patients.

Cloth, $1.50 net.

Blood Chemistry

We have issued no book within recent years which has been subjected to as heavy a revision as this *new (5th) edition of Todd's "Clinical Diagnosis by Laboratory Methods."* A full exposition is given, of course, to *blood chemistry*—a subject which today has assumed a place of pronounced importance. The examination of the duodenal contents, tests for acidosis and other underlying principles, the most useful of the tests for renal function, are discussed at length. There have been added sections on Rosenthal's application of the phenoltetrachlorphthalein test for liver function, the flocculation test for syphilis, the permutite method for ammonia in urine, methods for bilirubin in blood, colorimetric method of adjusting reaction of culture-media, classification of streptococci, methods of typing pneumococci and the newer facts relating to their typing. The sections which have been rewritten include the newer laboratory findings on nephritis, coagulation of the blood, blood platelets, special pathology of the blood and intestinal protozoa. Serodiagnostic methods have been presented in greater detail both as to technic and their interpretation and results. The complement-fixation test has been rewritten. It is our belief that there does not exist today a work on clinical pathology as complete, as definite, and as modern in the methods offered and in their application as this *new (5th) edition of Todd's "Clinical Diagnosis by Laboratory Methods."*

Octavo of 762 pages, with 325 illustrations, 29 in colors. By James Campbell Todd, M.D., Professor of Clinical Pathology, University of Colorado. Cloth, $6.00 net

SAUNDERS, *Publishers*

See Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "T," Therapeutics; "MI," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics.

Abortion, resection of uterus in....ab-802
Aeroplanes in medical service....E-769, 778
Albuminuria of runners....ab-796
Alcohol and juveniles....779
Ambulance, aeroplanes in medical service....E-769, 778
Ammonia, injury of eye from....ab-802
Anaphylaxis and tuberculosis....ab-797
menstruation as a form of....ab-797
Anemia, Gaucher's anemia....ab-793
hemolytic, hypernephroma with....ab-797
Anesthesia, local anesthetics....ab-792
splanchnic....ab-788
Aneurysm of heart, chronic partial....ab-802
Anthrax, vaccination, mechanism of, by way of skin....ab-796
Antibodies, action of formaldehyd on....ab-796
Antigens, heterologous, inoculation of....ab-792
Appendicitis with cryptorchidism....ab-790
Agranulocytosis, intestinal changes in....ab-798
Artery, coronary, occlusion of....ab-787
coronary, sclerosis of....ab-787
Aspergillosis of pleura....ab-794
Asphyxia neonatorum, treatment of....ab-798
Bacillus, colon....ab-797
Back pain and sacralization....ab-801
Bacteriophage for typhoid....ab-792
in skin diseases....ab-796
Bile duct, congenital occlusion of....ab-793
postoperative stricture of....ab-788
Binder, abdominal, in second stage of labor.*753
Bismuth and phagocytosis....ab-795
Blood pressure, venous, in the normal....ab-792
coagulation, sodium citrate hastens....ab-789
effect of irradiation on....ab-787
sedimentation test, kaolin....ab-797
sugar and Kahn's reaction....ab-799
suprarenals in hypoglycemia....E-770
Book Notices....785
Books Received....Adv. page 28
Botulinus bacillus not in excreta....ab-791
spores, resistance of, to disinfectants....ab-791
toxin produced by enzyme....ab-791
Broad ligament, hydatidiform mole of....ab-794
Cancer, hidden....ab-800
Carbon monoxid asphyxia, resuscitation from....*758
Cardiovascular tonus....ab-799
Cells, colloids and minerals in....ab-795
Cesarean section....ab-792
tardy cesarean section....ab-796
Chlorin inhalations....784
Colon, arrested development of....ab-788
Conjunctivitis, Parinaud's infectious....*765
Corns....ab-799
Cripples, war, statistics of, in Vienna....779
Cryptorchidism complicates appendicitis....ab-790
Cystin metabolism, disturbance of....ab-800
Deaths....781
Diabetes mellitus, "optimal" diets for in....*733
mellitus, pathologic physiology of....ab-798
problem of today....*727
Diagnosis, methods of....ab-790
Diet and tissue growth....ab-791
Digifolin administration....ab-787
Dyes, medicinal....767
Dysentery, bacillary, serodiagnosis of....ab-798
Dyspepsia, nervous....ab-789
Edema, biologic classification of, in children....ab-799
Electrical shock, artificial respiration in....*764
resuscitation after....*756
Empyema, postoperative stage of....ab-797
Encephalitis, epidemic, treatment of....ab-798, ab-800
Epilepsy, etiology of....ab-798
Erythrocytes, effect of lead on....ab-791
"leaded," cause of....ab-791
Esophagus, diverticulum of....ab-791
Eye, injury from ammonia....ab-802
Feces, occult blood in....*741
Fetus, glandular activity in....ab-793
Fibroma, sublingual....ab-788
Fistula, congenital arteriovenous....*743
Foreign Letters....778
Formaldehyd, action of, on antibodies....ab-796
injections, shock after....ab-800
Gangrene of pneumococcus origin....ab-795
Gas poisoning, artificial respiration in....*764
Gastro-enteritis, Breslau, and paratyphoid B....ab-798
Gastro-intestinal tract, occult bleeding in.ab-797
Gentian violet medicinal....767
Goiter, exophthalmic, lung volume in....ab-801
Government Services....777
Health statistics of Vienna for 1924....779
Heart-Burn and yawning....ab-798
Heart function test, plethysmographic....ab-800
fluoroscopic examination of....ab-790
sounds in infectious diseases....ab-800
Heat production through suprarenal secretion....E-771
Hemoclastic crisis....ab-800
Hernia, incarcerated, reduction of....ab-801
into inferior duodenal fossa....ab-792
Herniotomy....ab-789
jack-knife position after....ab-789
Heroin, ban on....784
Herpes, latent febrile....ab-801
virus of....ab-801
Hip joint disease, nontuberculous....ab-796
Hydatidiform mole of broad ligament....ab-794
Hydrocele, injection treatment of....ab-800
Hymenolepis nana in Porto Rico....*766
Hypernephroma with hemolytic anemia....ab-797
Hypertension, abdominal vessels in....ab-801
ureosecretory coefficient in....ab-795
Infants, digestion of protein by infants....ab-799
Infectious diseases, heart sounds in....ab-800
Influenza, intestinal, in infants....ab-800
Insulin, clinical significance of....ab-799
does not promote fermentation....E-771
extrahepatic action of....ab-799
hyperinsulinism and dysinsulinism....*729
Intestines, hemorrhagic ulcer of diverticulum....ab-789
Iodin, action of....ab-799
Joint diseases and ovarian insufficiency..ab-802
Keratosis, senile....784
Kidney, closed tuberculous cavity in....ab-797
severing nerves in pedicle of....ab-795
tuberculosis....ab-802
tuberculosis of, in children....ab-796
Knee, tuberculosis of....*750
Labor, abdominal binder in second stage of..*753
discussion on....ab-790
pituitary extract in....ab-797
Labyrinth, bone neoformation in....ab-802
Lead, distribution of, in organism....ab-791
cause of "leaded" erythrocyte....ab-791
effect of, on erythrocytes....ab-791
Leukocyte count, differential, of Australians....ab-794
Lipoid treatment and organ stimulation..ab-800
Liver secretion, action of salts on....ab-798
primary carcinoma of....ab-788
Lung volume in exophthalmic goiter....ab-801
Lymphocytes, locomotion of....E-771
Lymphogranulomatosis, inguinal, etiology of....ab-797
Lymphosarcoma, pigmentation of skin with.ab-789
Malaria, quinin intravenously in....ab-796
neo-arsphenamin in....ab-796
Marriages....780
Medical Education, Registration....784
Medicolegal....786
Meningitis, pneumococcus....ab-798
Menstruation as a form of anaphylaxis....ab-797
Metastasis, late, of thyroid sarcoma....ab-797
Metrorrhagia after menopause....ab-796
Migraine, paralytic signs of....ab-789
Milk, human, lipase in....ab-799
Morphin, fate of, in body....E-768
Mouth, sublingual fibroma....ab-788
Muscle, double innervation of....ab-793
phosphoric and lactic acid in....ab-799
rectus abdominis, rupture of....ab-790
Mycosis fungoides....ab-789
Neuritis, retrobulbar, in multiple sclerosis..ab-795
Neurosis, traumatic....*738
Neurosyphilis, tryparsamid in....ab-787
New and Nonofficial Remedies....767
News....772
Novel, psychopathologic....778
Nutrition, adequate versus optimal....E-768
Oat-bran extracts, action of....ab-799
Onychauxia in cunuchoid....ab-789
Osteitis cutis....ab-789
Otitis media, bacteriology of....ab-791
Ovary, insufficiency of, and joint diseases..ab-802
insufficiency, ultraviolet rays in....ab-795
intra-uterine transplanting of....ab-802
Pancreas secretion, action of salts on....ab-798
Pancreatitis, acute....ab-788
Papaverin, action of, on contraction of stomach....ab-796
Paralysis, progressive, latent....ab-799
spastic, in children....ab-802
spastic, ramisection for....ab-793
Paratyphoid bacillus and Breslau gastro-enteritis....ab-798
Pepsin, connection of gastric ulcer with..ab-798
Peptic ulcer, connection of, with pepsin..ab-798
differential blood count with....ab-800
Phagocytosis and bismuth....ab-795
Pituitary extract in obstetrics....ab-797
Pleura, aspergillosis of....ab-794
Pneumococcus, transmission of....ab-794
Pneumonia, oxygen in....*758
precipitating crisis in....ab-792
Pneumothorax, artificial....ab-793
graduated exercise for pneumothorax patients....ab-793
in tuberculosis with hyperthyroidism...ab-795
Propaganda for Reform....782
Prostatectomy, perineal....778
Pruritus, treatment of....*766
Puerperal fever, treatment of....ab-801
Pyelitis, diagnosis, blunders in....ab-802
staphylococcus....ab-802
Queries and Minor Notes....784
Radiotherapy in infectious and parasitic diseases....ab-798
Ramisection, double innervation of muscle..ab-793
for spastic paralysis....ab-793
sympathetic....ab-793
Respiration, artificial, in electric shock and gas poisoning....*764
Resuscitation....*758
after electrical shock....*756
"Reticulo-endothelial apparatus"....ab-801
and water metabolism....ab-799
Rheumatism, and tuberculosis....ab-795
Ribs, cervical....ab-800
Roentgen rays, gage for....ab-798
Rosaniline dyes, triphenylmethane....767
Scarlet fever....ab-802
Schools, medical inspection of, in Belgium..779
Sclerosis, multiple, retrobulbar neuritis in....ab-795
Sinuses, transillumination of....ab-797
Skin diseases, bacteriophage in....ab-796
Smallpox, vaccination protects against...ab-798
Society Proceedings....786
Sounds, localization of....ab-801
Spine deformities, functional correction of....ab-801
sacralization and back pain....ab-801
Spirochaeta icterohemorrhagiae, cultivation of....ab-797
Starvation, loss of weight through organ extracts from animals in inanition...ab-795
State Board Examinations....784
Stomach diseases and syphilis....ab-794
pedunculated tumors of....ab-796
secretion, influence of fats on....ab-798
Streptococci, species of....ab-800
Submaxillary gland, blood-borne infection of....ab-792
Suprarenals in hypoglycemia....E-770
heat production through secretion of....E-771
Syphilis and gastric disorders....ab-794
and typhoid in infant....ab-797
congenital, incidence of, in Austria....780
congenital, in second generation....ab-795
congenital, latent, blood findings reveal.ab-796
neurorecurrence of....ab-795
Tetany, dietetic treatment of....ab-799
Throat, sore, lysis by exudates of....ab-796
Thyroid sarcoma, latent metastasis of....ab-797
Tissue growth and diet....ab-791
Tonics and Sedatives....Adv. page 22
Toxemias, exsanguination transfusion in..ab-796
Traumatic neurosis....*738
Triphenylmethane (rosaniline) dyes....767
Tubercle bacilli, determination of, in body fluids....ab-797
Tuberculin reaction, percutaneous, Hamburger's....ab-800
Tuberculosis and anaphylaxis....ab-797
and rheumatism....ab-795
experimental, vitamin B in treatment of....ab-794
in children, occult....ab-800
partial antigens in....ab-790
preventorium....ab-789
vaccination against....ab-792
Twin births....778
Typhoid and syphilis in infant....ab-797
bacteriophage for....ab-792
inoculation of heterologous antigens...ab-792
Typhus immunity, active....ab-800
Urea coefficient in hypertension....ab-795
Urethritis, phlegmonous periurethritis....ab-795
Uterus, cancer, biology and treatment of..ab-798
cancer of cervix, diathermy in....ab-796
cancer of cervix, treatment of....ab-792
cancer, surgery of....ab-801
remote results of wedge resection of fundus of....ab-796
Verruca, Peruvian....ab-797
Vestibular reactions with simultaneous lavage of both ears....ab-800
Vitamin B in treatment of experimental tuberculosis....ab-794
Water metabolism and reticulo-endothelial system....ab-799
Weil-Felix reaction in proteus infection..ab-801
Xanthoma....ab-789
Yawning and heart-burn....ab-798

BOOKS Medical Works of All Publishers. All American and English Monographs. One Order. One Remittance. Get Our Latest Bulletin. Chicago Medical Book Co., Congress & Honore Sts., Chicago

HAVE YOU SUBSCRIBED FOR HYGEIA *A Journal of Individual and Community Health?*

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 83, No. 10 CHICAGO, ILLINOIS SEPTEMBER 6, 1924

THE DIABETIC PROBLEM OF TODAY*

ELLIOTT P. JOSLIN, M.D.

BOSTON

A new race of diabetic patients has come on the scene. The duration of the diabetes among patients entering the hospital for treatment during 1923 was 5.6 years, or two years greater than in 1921 and 1922. The length of the disease among these living diabetic patients exceeds, by a year, the entire duration of the diabetes among all my fatal cases up to the year 1914. According to the standards of a decade ago, the average living hospital diabetic patient today is already more than one year dead.

The diabetic patient of today is an older diabetic patient—eleven years older than a decade ago. Early fatal cases and groups of living patients in former years were 41 years of age, but a similar group this last year was 52 years old.

The increasing morbidity of diabetes is reaching its maximum. This is evident on every hand. No increase is to be noted in the number of children coming for treatment, and since, as mentioned above, the patients seen are older, they represent, to a considerable extent, a milder type of the disease, which of itself indicates not so much new cases, as a greater zeal displayed in their discovery. Finally, the steadily increasing number of persons with doubtful diabetes, often found at insurance examinations, is proof positive that, in such communities as Boston and New York, the "round-up" of the diabetic patient is nearly accomplished.

IMPORTANCE OF PREVENTION

The present halt in the progressive tendency of the morbidity of diabetes, however, will not last long unless preventive measures are adopted. Every child saved from death with diphtheria and scarlet fever, every young adult rescued from typhoid and tuberculosis, makes a candidate for future diabetes. Wherever sanitary science is at its best, the morbidity of diabetes will be at its highest, because diabetes is fifteen times as common among those over 40 years of age as among those under 40 years, and the percentage of Americans today over 40 is rapidly increasing.

A generation ago, the average expectation of life was 38 years, and now it is 57. Therefore, diabetes is many times as frequent in the whole community today as heretofore and, with increasing longevity, is destined to be more common, but not necessarily more common for the first four decades. Already, in Boston and New York, one death in sixty is due to diabetes. This is not a pleasing thought, because the chief complication of diabetes is premature old age. Although we, as a nation, want to live to be old, we do not want to be old too soon.

To stamp out a pestilence, one studies and attacks it where its ravages are worst. Yellow fever was investigated and prevention found in Cuba, not in the United States. The pathway is equally plain in diabetes. First, this disease is known to be fifteen times as frequent among adults; secondly, this disease is from ten to twenty times as common among the fat; thirdly, this disease is two and a half times as common among Jews. Any campaign to eradicate diabetes, therefore, should yield maximal returns if directed toward the prevention of obesity and toward its diagnosis among the adult fat females, and particularly among the Jews.

DIABETES NOT A CONGENITAL STIGMA OF THE JEWISH RACE

The Jew, in my opinion, is not prone to diabebtes because he is a Jew, but rather because he is fat. Jews are fat; though, shameful to relate, there are few statistics of the comparative weights of even a thousand Gentiles and a thousand Jews. These I am now able to add through the courtesy of the Mutual Life Insurance Company of New York (Table 1). Different interpretations can be put on this table, but it would appear that more Gentiles than Jews were underweight and more Jews than Gentiles overweight.

A study of the weights of my adult diabetic Jewish patients before they contracted the disease shows that the tendency is distinct for them to be fatter than the average diabetic patient under similar conditions. Eighty-five per cent. of the Jewish patients were overweight, in contrast to 70 per cent. of a mixed series of 1,000 Gentiles; 4.7 per cent. of them were underweight, in contrast to 12.2 per cent. of the non-Jewish patients.

If diabetes were a characteristic of the Jewish race, it should be manifested from youth to old age, but this is not the case. On comparison of the age incidence of the disease in 500 of my Jewish patients with the age incidence of the disease in 2,611 of all my patients, I find that, instead of the incidence running parallel through all the decades, it was but half as common among Jews in the first two decades of life, and less common in the third, sixth, seventh and eighth decades, leaving the fourth and fifth decades alone to exceed the Gentiles in age frequency. A Jewish child is no more prone to diabetes than the child of a Gentile.

In New York, three tenths of the population is Jewish, and in Boston one tenth, and yet the diabetic death rate is essentially the same in the two cities; and in Brookline, a suburb of Boston, where the Jewish population is hardly more abundant than in Boston, but

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

where the inhabitants undoubtedly average older, richer and, presumably, fatter, the rate is double, one death in every thirty deaths being due to diabetes. These three considerations should remove from the Jew the stigma of a congenital tendency to diabetes.

INSULIN

Insulin is better than any of us thought a year ago. A coma patient in 1924 recovers far more surely and simply than in 1923. The country practitioner can put a catheter in the bladder and thus determine each hour, from examination of the urine, what the next dose of insulin should be. The diabetic patient who stands next in the profit and joy derived from insulin is the one of preinsulin days who was most faithful to treatment. What it has done for such patients is past belief. Insulin has clinched the proof that the patient with mild diabetes is often the one to fall into coma needlessiy, and that diet alone is sufficient for a large proportion of diabetic patients in advanced life. When such patients live rigidly on the prescribed diet, which they are apt to do when taking insulin, to their surprise they often find that their insulin can be omitted. Perhaps one fourth of my patients who take insulin later become able to leave it off and live comfortably on diet alone.

TABLE 3.—*Changes in Jewish Patients* *

Age, Yrs.	Number of Cases	Below Standard Weight: 30 to 21 %	20 to 11 %	10 to 6 %	Normal Average Zone, +5% to −5%	Above Standard Weight: 6 to 10 %	11 to 20 %	21 to 30 %	31 to 40 %	41 to 50 %	51 to 60 %	61 to 70 %	71+ %	Per Cent. for the Decade Below Normal Zone
1-10	7	0	2	1	3	0	1	0	0	0	0	0	0	43
11-20	17	0	2	2	6	3	2	2	0	0	0	0	0	24
21-30	54	0	0	1	11	9	8	12	6	3	3	0	1	2
31-40	103	0	0	3	11	4	23	20	17	13	7	1	4	3
41-50	158	0	3	1	9	9	35	25	29	18	15	6	3	3
51-60	73	0	2	3	5	6	13	15	18	5	5	1	0	7
61+	23	0	0	0	4	1	4	5	4	4	0	1	0	0
1-61+	430	0	9	11	49	32	86	79	74	43	30	9	8	

* Variation from the normal of the maximum weights, at or prior to onset of diabetes, of 430 diabetic Jewish patients, calculated for height, age and sex.

TABLE 1.—*Height and Weight of Jews and Gentiles* *

Ages	Total Number Cases	Average Height: Ft.	In.	Average Weight, Pounds	Average Weight for Each Inch in Height, Pounds	Below Normal Weight: −25% to −35%	−15% to −25%	−5% to −15%	Total: Cases	Per Cent.	Normal Weight, −5% to +5%: Cases	Per Cent.	Above Normal Weight: +5% to +15%	+15% to +25%	+25% to +35%	+35% to +50%	Total: Cases	Per Cent.
One Thousand Gentiles																		
15-19	38	5	8	141.8	2.07	—	10	15	31	81.6	4	10.5	—	2	1	—	3	7.9
20-29	360	5	9	150.9	2.20	3	71	143	217	60.3	98	27.2	30	6	7	2	45	12.5
30-39	326	5	9	162.0	2.35	2	41	90	133	40.8	89	26.4	49	44	10	4	107	32.8
40-49	183	5	8	169.1	2.47	..	10	36	46	25.1	47	25.7	40	33	10	7	90	49.2
50-59	80	5	8	165.0	2.42	—	8	17	25	31.3	20	25.0	15	14	4	2	35	43.8
60 and over	13	5	8	168.0	2.48	—	—	1	1	7.7	5	38.5	4	3	—	—	7	53.8
Total	1,000	5	9	156.7	2.28	5	146	302	453	45.3	280	28.0	138	102	32	15	287	28.7
One Thousand Jews																		
15-19	51	5	7	138.7	2.07	1	14	22	37	72.5	9	17.6	5	—	—	—	5	9.8
20-29	381	5	7	151.1	2.24	—	56	128	184	48.3	115	30.2	41	20	17	4	82	21.5
30-39	279	5	7	158.8	2.36	1	25	64	90	32.3	76	27.2	37	37	13	6	113	40.5
40-49	229	5	7	160.8	2.40	2	15	39	56	24.5	67	29.3	50	35	14	7	106	46.3
50-59	56	5	7	160.6	2.39	—	4	10	14	25.0	17	30.4	14	4	5	2	25	44.6
60 and over	4	5	6	151.5	2.30	—	1	—	1	25.0	1	25.0	1	—	1	—	2	50.0
Total	1,000	5	7	155.4	2.31	4	115	263	382	38.2	285	28.5	168	96	50	19	333	33.3

* A comparison of average height and weight and the average weight per inch in height among 1,000 Gentile and 1,000 Jewish patients, all male, selected at random from cases examined by home office medical examiners, together with a distribution by weight groups with the percentage deviation from normal weight.

TABLE 2.—*Changes in Gentile Patients* *

Age, Yrs.	Number of Cases	Below Standard Weight: 30 to 21 %	20 to 11 %	10 to 6 %	Normal Average Zone, +5% to −5%	Above Standard Weight: 6 to 10 %	11 to 20 %	21 to 30 %	31 to 40 %	41 to 50 %	51 to 60 %	61 to 70 %	71+ %	Per Cent. of Each Decade Below Normal Zone
1-10	21	0	3	2	8	5	2	0	0	1	0	0	0	24
11-20	68	2	13	8	23	6	7	2	1	0	1	0	0	34
21-30	133	0	15	14	44	14	29	8	4	2	1	0	2	22
31-40	170	1	12	14	29	21	33	20	15	11	7	5	2	18
41-50	264	3	9	8	29	17	54	58	31	24	17	8	6	8
51-60	231	0	6	7	18	29	47	46	42	15	12	5	4	5
61-70	90	0	0	2	9	10	19	24	16	7	1	1	1	2
71-80	23	0	2	1	8	3	2	3	3	1	0	0	0	13
1-80	1,000	6	60	56	173	105	193	161	112	61	39	19	15	

* Variation from normal of maximum weights, at or prior to onset of diabetes, of 1,000 diabetic Gentile patients, calculated for height, age and sex.

The educational value of insulin has been enormous. It has promoted among the profession and the patients a recognition of the value of the diet as nothing heretofore has done, and the public has acquired a knowledge of diabetes and a respect for scientific medicine that is almost unbelievable. From a newspaper clipping in Ottawa, I learned first of the hypoglycemic reactions of defeated marathon runners in Boston.

The power of insulin is not yet exhausted, and new developments can be expected. A young man in the seventh year of his diabetes came to me in November, 1923, with a fasting blood sugar of 0.29 per cent., taking 88 units of insulin daily. During the last six months, he has not been seen by any physician, but he and his competent nurse have been able to reduce the dosage of insulin to 20 units coincidently with (what I have found unusual) a gain in weight of 20 pounds (9 kg.). How can one escape the conviction that a regeneration of the islands of Langerhans has taken place in this case?

STATUS OF AUTHOR'S FIRST ONE HUNDRED AND TWENTY-SEVEN PATIENTS TREATED WITH INSULIN

One hundred and twenty-seven of my patients, selected chiefly for the unusual severity of the disease, have taken insulin on the average for about eighteen months, and all for more than one year. This group was reported a year ago, and for that reason is reported again. Twenty-three of the patients are dead, and 104 are alive. The duration of the diabetes in the fatal cases was 5.4 years, and in the living patients has already reached 5.3 years. Even at this early date, it is

evident that the series will outstrip in duration, by far, all previous series of cases that have come under my observation. But the significance of this record is disclosed by a study of the fatalities.

Although one of the living patients has had the disease 24.3 years, not one of the patients who died succumbed during the first year of the disease. There were nine deaths from coma, but only two of these occurred in the hospital. Seven of these coma deaths were needless—they were the result of ignorance and inexperience or deliberate neglect of treatment, even to the extent of giving up insulin. In preinsulin days, a diabetic patient who broke diet might live for some time, but *facile descensus averno* is the pathway of that diabetic patient who has already outlived the usual expectation of his disease and, on insulin wings, soars high in diet. Of the remaining fourteen deaths, septicemia, meningitis, erysipelas, tuberculosis, multiple abscesses, and intestinal obstruction in a woman over 80 years of age, each accounted for one, while cardio-renal disease and penumonia each accounted for four deaths.

Ninety three of the 127 patients are still taking insulin, and the average dose is 21.4 units. Ten patients are alive and not using insulin.

The average gain in weight of the patients is 13.5 pounds (6 kg.), or 14.4 per cent. One patient, B. A., a girl, has gained 23.2 pounds (10.5 kg.), or 81 per cent., and another, 44.2 pounds (20 kg.) or 58 per cent.

EVOLUTION OF TREATMENT

The evolution of the treatment of diabetes epitomizes the trend of medicine. Thirty years ago, everybody prescribed for the diabetes. Then came a period when chemical inventions were novel and complex, and their intricacies demanded specialists for their execution and interpretation. Now we are reverting to the earlier epoch when the diabetic patient required the assistance of the general practitioner at his best. This is plainly apparent from the cases one now has to treat. Of the complaints of the diabetic patients today, one fourth are surgical, one fourth related to the circulation, and one fourth of a general nature, with practically the whole of the remaining fourth dependent on acidosis—the intimate complication of the disease. To meet all these demands, the physician who treats diabetic patients must practice medicine with eyes alert to all angles of the art; but, above all, he must be one hundred per cent. efficient in his endeavor to prevent the development of future cases.

Five Hundred Fatal Cases of Diabetes.—Coincident with the increasing use of insulin, the death rate from diabetes has been declining for a year and half. There is no proof as yet that these two phenomena are connected. To determine whether fatal cases of diabetes had received insulin, and if so, for how long, the Metropolitan Life Insurance Company analyzed data submitted by physicians who had certified the death certificates in 500 recent cases of diabetes. It found that less than one-half of these fatal cases received insulin at any time, and that 62 per cent. of those which did, received insulin for a period of less than one month. In 31 per cent. of the cases analyzed, insulin had been administered for a period of less than one week before death. Coma was the most frequent complication in these fatal cases. Arteriosclerosis was a complication in 24.8 per cent.; chronic nephritis in 23.4 per cent., and gangrene in 23.4. It was also shown by this study that insulin was much more commonly used in hospitalized cases than in the cases treated at home and that it is more extensively used in the larger cities than in rural areas or small towns.

HYPERINSULINISM AND DYSINSULINISM *

SEALE HARRIS, M.D.
BIRMINGHAM, ALA.

Diabetes, of which hyperglycemia is a manifestation, is essentially a condition due to a deficient secretion of insulin by the islands of Langerhans; and, according to modern medical nomenclature, should be called hypo-insulinism. Diabetes, or hypo-insulinism, therefore, bears the same relation to the internal secretion of the pancreas that myxedema, or cretinism (hypothyroidism) has to that of the thyroid gland.

We know that hypothyroidism is not the only dysfunction of the thyroid gland and that there is a hypersecretion of that important organ, hyperthyroidism, in which there are certain characteristic symptoms; i. e., the syndrome called hyperthyroidism. It has been observed that hyperthyroidism sometimes precedes hypothyroidism.[1] It seems probable that there are other dysfunctions of the islands of Langerhans, besides hypo-insulinism, and that an excessive formation of insulin may occur. Hyperinsulinism should produce definite results, i. e., a reduction in blood sugar, which, when below a certain limit, about 0.070, brings on characteristic symptoms, now known as the insulin reaction. It also seems probable that a deficiency of the secretion of insulin may follow prolonged excessive work of the islands of Langerhans; just as in other glands, or organs, hypertrophy and hyperactivity may be followed by degeneration, atrophy and loss of function.

It was this line of reasoning that caused me to think that there may be such a condition as hyperinsulinism, and when I saw the insulin reaction in diabetic patients, I realized that I had seen many nondiabetic patients who had complained of the same symptoms; i. e., hunger, weakness and the anxiety neuroses. I mentioned this to Dr. Banting while on a visit to the diabetes clinic in the Toronto General Hospital in March, 1923, and asked him whether he or others had observed an excessive secretion of insulin in laboratory animals or human beings. He said that they had done nothing on that line and that he had seen nothing in medical literature on the subject, and we have not been able to find any reference to hyperinsulinism in any medical publication.

Knowing the amount of food ingested at a given time, by means of blood sugar determinatons we are able to estimate with some accuracy the degree of insulin secretion, particularly since we know that by the administration of insulin, hypodermically, the amount of sugar in the blood may be reduced to any level, depending on the number of units administered and on the amounts of glucose-forming food ingested. It therefore seemed probable that, since hypoglycemia is the result of hyperinsulinemia, a study of the blood sugar in patients who have symptoms of hyperinsulinism should show readings of below 0.070 (70 mg. per hundred cubic centimeters of blood).

HYPOGLYCEMIC REACTIONS IN NONDIABETIC PATIENTS

The first patient, a physician, who presented symptoms of hyperinsulinism, consulted us, March 19, 1923,

---

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Barker, Hoskins and Mosenthal: Endocrinology and Metabolism, New York, D. Appleton & Co. 1: 66, 300, 302, 1922.

saying that every day about one hour before his noon meal he felt weak, nervous and so hungry that he could not work. He had found that he would get relief from taking candy or a soft drink or from drinking milk, eating fruit, or from eating anything. It was then about an hour before his time for luncheon, and a specimen of blood was obtained for the determination of its sugar content. It was found to be 0.065 (or 65 milligrams per hundred cubic centimeters of blood). On another occasion, May 15, 1923, the same hour, the blood sugar was 0.070. This patient has no other symptoms, except that he had been overweight and had lost about 25 pounds (11.3 kg.). His blood pressure was low, systolic 95, diastolic 60. A well balanced diet was given him, with instructions to take food of some kind every three hours. A year later, this physician told me that he had been feeling well since he had been taking food five times a day.

Oct. 4, 1923, a patient, who had been under observation at times for various digestive troubles for seven years, complained in these words: "I get so hungry and weak every day about an hour before meals that I feel as though I will die if I do not eat something. I believe that I would die if I had to go two or three hours past meal time without anything to eat. Eating anything always relieves me, and I am comfortable for three or four hours after meals." He was told to wait in the office to let us see him at a time when he was having the symptoms of which he complained. His blood sugar was 0.065 at noon. He was told to eat a full meal and come back two hours later. The blood sugar was then 0.130. A glucose tolerance test (100 gm. of glucose) was given him, with the blood sugar readings and urinary findings given in the accompanying table.

Blood Sugar Readings and Urinary Findings

Time	Blood Sugar	Urine Test
12:15 p. m.	0.098	No sugar
12:45 p. m.	0.116	No sugar
1:15 p. m.	0.167	Trace of sugar
2:30 p. m.	0.135	No sugar
3:30 p. m.	0.067	Trace of sugar

This patient lived in a suburb, about an hour's ride by trolley, and after the glucose tolerance test went home without eating anything. He said that before he reached the end of his trolley ride he was so weak that he could hardly walk, and that it was with great effort that he was able to get home. He said that he thought he would die before his wife could get him something to eat, and felt so faint that he could hardly eat; but that he felt all right after eating. Since his last blood sugar reading at 3:30, two hours before he had food, was 0.067, it was probably much lower when he had the severe hypoglycemic reaction. In this case, the glucose seemed to have stimulated the secretion of insulin, which continued after the glucose had been disposed of. There also seems to be a lowered glucose tolerance in this case, probably a dysinsulinism, in a patient who is potentially diabetic.

Jan. 23, 1924, a married woman, aged 39, with a history of a transient glycosuria on two occasions in the previous eighteen months, presented marked symptoms of hypoglycemia without having had insulin. She had been overweight, having weighed 220 pounds (99.7 kg.), when a trace of sugar was first found in the urine, in the summer of 1922. She was then placed on a low fat, low carbohydrate diet and reduced to 160 pounds (72.6 kg.), but her health had become impaired during that time. She complained of one striking symptom in these words: "I awaken at from 12 to 2 at night with a nervous rigor, or quivering, very weak, disturbed feeling, cold extremities, and am hungry. Eating an orange relieves me." She also complained of the "nervous rigors" when her stomach was empty during the day. A blood sugar reading was ordered taken during one of these nervous rigors, and it was found to be 0.047 (the lethal low blood sugar point in rabbits is 0.040). Two hours after having had 25 gm. of glucose, the blood sugar was 0.130. This patient presented symptoms of both hyperinsulinism and hypoinsulinism, apparently a dysinsulinism analogous to patients showing evidences of both hyperthyroidism and myxedema. This patient had no sugar in the urine at any time during a six weeks' stay in the infirmary, though, since her family physician is a careful, well prepared physician, I do not question her having had glycosuria when she weighed 220 pounds (99.7 kg.) and was no doubt eating an excess of glucose forming foods. A detailed report of these three cases will be given with the complete histories of other patients that we believe had hyperinsulinism.

The foregoing three cases showed symptoms of hyperinsulinism, and, with blood sugar findings below 0.070, stimulated us to undertake further studies of the blood sugar at the fasting period in nondiabetic patients. Since that time blood sugars have been made a routine in the examination of all patients.

It should be remembered that all our patients come to us for treatment of some gastro-intestinal or nutritional disturbance, and all in this series were ambulatory, though some of them were sent to the infirmary for rest, diet and general observation. Blood sugar determinations were made in 253 patients, ninety-two of whom were diabetic patients who showed varying degrees of hyperglycemia. Of the 169 cases, twelve patients had blood sugar readings of below 0.070 in specimens obtained during the fasting period; and all of these, with two or three exceptions, had symptoms that could result from hypoglycemia. The blood sugar determinations were made by Dr. W. S. Geddes, or under his direction. The Folin-Wu method was used.

BLOOD SUGAR READINGS IN STARVATION

The question as to whether these low blood sugar readings were due to a lack of food or to a hyperinsulinemia was considered. If due to a lack of food, the starving patient should show a low blood sugar. We chanced to have four patients who were literally starving to death. Three were cases of carcinoma, with almost complete occlusion of the esophagus. All three patients were very much emaciated, and had been almost unable to take any food for several days or weeks before they came to us. None of them gave a history of symptoms of hypoglycemia. The blood sugar readings on these three patients were 0.090, 0.084 and 0.090.

We also had a patient who had almost complete stenosis of the pylorus, due to tumor, ulcer or carcinoma of the pyloric end of the stomach. The roentgen-ray examination showed 90 per cent. retention of the barium meal in six hours, and 75 per cent. retention in twenty-four hours. This patient had vomited practically everything she had eaten for weeks and was in a state of marked emaciation. The blood sugar was 0.079.

It seems that, in cases of starvation, the amount of sugar in the blood is kept within the normal range by endogenous catabolism. There is some evidence to

show that patients with carcinoma have reduced carbohydrate tolerance; but even so, in these cases the amount of glucose derived probably from the protein of the patient's own tissues was sufficient to keep the blood sugar above the point at which hypoglycemic reactions occur. Since, in the starvation cases, the blood sugars were within the low normal range, and none of the four patients had symptoms of hypoglycemia, and the patients having blood sugars below 0.070 with few exceptions had symptoms of an overdose of insulin, it surely seems that there is such a condition as hyperinsulinism.

CONCLUSIONS

1. Hyperinsulinism is a condition, perhaps a disease entity, with definite symptoms; i. e., those described as being due to hypoglycemia.

2. It seems probable that one of the causes of hyperinsulinism is the excessive ingestion of glucose-forming foods and that, as the result of overactivity induced by overeating, the islands of Langerhans become exhausted and hypo-insulinism (diabetes) follows. It is possible that the hunger incident to hyperinsulinism may be a cause of overeating, and, therefore, the obesity that so often precedes diabetes.

3. It seems probable that dysinsulinism, either an increase or a decrease in the secretion of insulin, may follow infection or trauma of the pancreas.

4. Since excessive hunger is a symptom of hypoglycemia, it may be that normal hunger is the call for glucose and that it may be in part or wholly of pancreatic origin and not entirely an expression of an empty stomach. It is also possible that, associated with ulcer of the stomach or duodenum, there may be a coexisting disorder of the pancreas, and that the frequent feedings which give relief in ulcer may do so by supplying the glucose to meet the needs of overfunctioning islands of Langerhans. In one case of ulcer, we found a low blood sugar.

5. Since blood pressure readings have been low in all except two of the nondiabetic patients who have had symptoms of hypoglycemia, it seems possible that hypo-adrenalinism may be associated with hyperinsulinism. It also seems probable that secretory disorders of the islands of Langerhans may be associated with dysfunctions of the thyroid, the pituitary bodies and other organs of internal secretion.

6. Fractional tests of gastric secretions after the Ewald meal have been made in several nondiabetic patients having symptoms of hyperinsulinism, with variable results, so that these is no apparent relation of secretory disorders of the stomach to pancreatic dysfunction.

7. No studies of the external secretion of the pancreas were made in these cases. It seems probable, however, that since a chronic pancreatitis is probably a cause of dysinsulinism, the glands secreting trypsin, amylopsin and steapsin are often involved, with either increased or decreased function.

REPORT OF CASES OF HYPERINSULINISM

CASE 1.—*History.*—A physician, J. G. P., aged 62, a white man, married and having six children, all living, March 19, 1923, complained of an uncomfortable sensation in the stomach when empty; a weak and nervous feeling before dinner and supper, but said he got relief from taking a soft drink, fruit, or from eating a meal. He slept well for three or four hours after retiring and then remained awake the remainder of the night. He tired easily, but had no dyspnea on exertion. He was irritable, and worried unnecessarily over business and professional matters. The blood pressure had been low at times, the systolic ranging from 110 to 85.

The family history was not important.

He had had the usual diseases of childhood, without sequelae. During adult life he had been strong, robust and active in professional and civic affairs. He had typhoid fever in 1895; pneumonia in 1902 and again in 1919; influenza, three times, and cystitis in 1910. He said he had no venereal infection. He had had digestive disturbances at times for the past six years, a heavy aching sensation in the epigastrium, sour stomach, etc.

He was a small eater now, though formerly he ate immoderately. He drank one cup of coffee for breakfast. He had been overworked for years. He smoked excessively and had been a moderate drinker at times since early manhood.

During the past five or six weeks he had worked very hard, and began having discomfort in the stomach about meal time, usually before dinner and supper when the stomach was empty, associated with a depressed, weak feeling and nervousness. Relief would be obtained by eating his usual meal, fruits, or even taking a soft drink. Often after sleeping three or four hours at night he would remain awake the rest of the night. There was frequently during the day a feeling of weakness, and he became fatigued easily from moderate exercise.

Examination.—Nothing of importance was observed on physical examination. The teeth, tonsils, thyroid, heart, lungs and abdomen were apparently normal. The blood pressure was: systolic, 115; diastolic, 70; pulse, 45; and one month later: systolic, 95; diastolic, 60; pulse, 35. The weight was 163 pounds (74 kg.); height, 5 feet 11½ inches (181.6 cm.), the standard weight being 184 pounds (83.5 kg.).

Examination of the urine revealed: specific gravity, 1.026; albumin, 0; sugar, 0; indican, a trace; no cells or casts. Blood examination revealed: hemoglobin, 80; red cells, 4,360,000; white cells, 7,200; polymorphonuclears, 65 per cent.; small lymphocytes, 34 per cent.; large lymphocytes, 1.1 per cent.; no malaria. There was no occult blood in the feces, and there were no parasites. The Wassermann reaction was negative. The blood sugar, April 27, was 0.065; May 15, 0.070.

A fractional examination of the gastric contents after the Ewald test breakfast revealed:

Total acidity:	15	25	35	45	30
Free hydrochloric acid:	5	20	30	30	15

On roentgen-ray examination, the heart and the lungs were found normal; the gastro-intestinal tract was in a position level with the umbilicus; there were no filling defects; the twenty-four hour barium meal was in the cecum to the hepatic flexure.

The pathologic diagnosis was, no lesion found. The functional diagnosis was, hyperinsulinism, arterial hypotension, intestinal toxemia, 21 pounds (9.5 kg.) below the normal standard weight.

The etiologic factors were overwork and worry, with possible infection of the pancreas in an attack of influenza or pneumonia.

Treatment and Result.—The patient was instructed to eat three small meals a day, with a glass of milk or fruit three hours after meals. One year later the patient informed us that he had had no symptoms since he has been taking food five times a day.

CASE 2.—*History.*—H. J. R., aged 52, a miner, married, with one child living, Oct. 5, 1923, complained of hunger spells when his stomach was empty, preceding the time for his regular meals and often late in the afternoons. He became very nervous and weak when hungry, perspiring freely and often having to sit down to rest. He got so weak that he could hardly eat. At night he got cold and had sweats, aching all over.

The family history was not important.

He had the usual infectious diseases of childhood, without any complications. He had the grip in 1889, and the same year he had skin lesions suggesting syphilis, but two Wassermann tests were negative. He had symptoms of digestive disturbance for fifteen years, gas, pains in the stomach, constipation, mucus in the stools, and headaches. He had a bronchitis which was suggestive of tuberculosis, though no positive diagnosis was made.

He had been taking one cup of coffee daily, and smoked from eight to ten cigars each day. Formerly, he drank alco-

holic stimulants excessively. His diet had consisted largely of meats and carbohydrates.

At least fifteen years before, he began having constipation, gas in the stomach, and pains in the abdomen, and he passed mucus in the stools. He frequently had severe headaches, associated with constipation. In October, 1919, following an injury that crushed the left arm and necessitated amputation, the digestive symptoms became worse. For the past few months he had been almost incapacitated for work because of extreme hunger, weakness and nervousness for one or two hours before meals. He found that taking food relieved the symptoms.

Examination.—The teeth, tonsils, thyroid, lungs, heart and abdomen were normal. The left arm was amputated below the elbow. The weight was 175 pounds (79.4 kg.); height, 5 feet, 11 inches (180.3 cm.), the standard weight being 178 pounds (80.7 kg.).

The blood pressure was: systolic, 120; diastolic, 80; pulse, 40. Blood counts and differential were normal; there were no malarial parasites. The Wassermann reaction was negative. The blood sugar, October 4, was 0.065 (fasting); two hours after a meal, 0.130. The glucose tolerance test, Jan. 9, 1924, was 0.098; 0.116; 0.167; 0.135; 0.067, with a trace of sugar in the urine at 0.167. After the last blood reading, the patient went home and suffered considerable weakness, tremors, sweating and collapse, but eating relieved him. The urinalysis revealed: specific gravity, 1.025; albumin, 0; sugar, a trace; ketones, a trace; the microscopic examination was negative. Later, a test showed no sugar. There were no parasites, but a trace of occult blood was present in the feces.

Fractional examination of the gastric contents after an Ewald test breakfast revealed:

Total acidity:	40	45	60	80	90	75	60
Free hydrochloric acid:	25	30	50	70	80	60	55

On roentgen-ray examination, the heart and lungs were normal; the stomach was 4 inches below the umbilicus; there were no filling defects, and barium in seventy-two hours occupied the transverse colon.

The pathologic diagnosis was chronic colitis, possibly chronic pancreatitis; the functional diagnosis, hyperinsulinism; potential diabetes; hyperchlorhydria.

The etiologic factor was improper eating. The colitis may have been the focus of infection for a chronic pancreatitis.

Treatment and Result.—Food was taken every three hours while the patient was awake. Tincture of belladonna was prescribed. The patient improved, but has to take food every three hours.

CASE 3.—*History.*—Mrs. E. E. G., aged 39, white, married, with no children, Jan. 23, 1924, complained of often waking during the night with a feeling of extreme weakness and nervousness, and that she had to take the juice of an orange for relief. She suffered from gas in stomach and constipation; poor appetite; nervousness, and glycosuria.

The family history was unimportant.

She had the usual diseases of childhood, with no complications. She had a lung abscess in 1889, with hemorrhages, and was in bed for six months, after which she was an invalid for two years. She had malarial fever in 1914; influenza in 1918, and two mild attacks since.

She had been in the habit of eating excessively of sweets and pastry. She drank one cup of coffee a day.

Sugar had been found in the urine one and one-half years before, but was controlled by diet. She had no other symptoms of diabetes. She wakened at between 12 and 2 in the night, quivering, with weakness and a disturbed feeling, and found it necessary to take the juice of an orange for relief. The extremities were cold. Gastric distress, following a tooth extraction, began one year before, with general debility, gas, fulness and stubborn constipation. She had a poor appetite. She was very nervous and under high tension.

Examination.—The teeth had been extracted; the tonsils removed. The eyes reacted to light and in accommodation. There was slight exophthalmos. There was no apparent enlargement of the thyroid. There was a slight tremor of the hands. The lungs and heart and the abdomen were normal. The pulse was 100. The blood pressure was: systolic, 120; diastolic, 80; pulse, 40. The weight was 160 pounds (72.6 kg.); the maximum weight, in September, 1922, 210 pounds (95.2); the height, 5 feet, 4 inches, the standard weight being 136 pounds (61.7 kg.).

The urinalysis revealed: specific gravity, 1.015; a faint trace of albumin; no sugar; the microscopic examination was negative.

The hemoglobin was 90. There were 4,264,000 red cells and 7,600 white cells; polymorphonuclears, 64 per cent.; small lymphocytes, 35; transitionals, 0.1; no malaria. The Wassermann reaction was negative. There was no occult blood in the feces; the microscopic examination was negative. The blood sugar when the patient was fasting was 0.047; one hour after eating, 0.130; during a nervous spell, 0.095. After taking 20 gm. of glucose, she became much better. At another time, when she was fasting, the blood sugar was 0.111.

Fractional examination of gastric contents after an Ewald breakfast was unsuccessful on account of severe vomiting.

Roentgen-ray examination showed the heart normal; slight fibrosis of the lungs; the gastro-intestinal tract and stomach level with the umbilicus; no filling defects, and at the end of twenty-four hours, the barium occupying the cecum to the hepatic flexure.

The pathologic diagnosis was: endocrine disturbance, chronic colitis, and mild diabetes; the functional, hyperinsulinism, hyperchlorhydria, and intestinal toxemia. She was 24 pounds (11 kg.) overweight.

The etiologic factors were overeating and a diet deficient in vitamins.

Treatment and Result.—The treatment prescribed was rest; a low fat, low carbohydrate diet, and buttermilk or orange juice between meals and at night if she awakened. Her condition became much improved.

CASE 4.—*History.*—Miss O. S., aged 29, white, a teacher, seen March 15, 1924, complained of being very nervous and weak about noon and that she was worse if she had eaten a light breakfast. She was underweight. She suffered from urticaria, poor appetite, and weakness.

The family history was not important.

She was healthy and strong during childhood, having the usual infectious diseases without complications. She had a malarial attack in 1898; severe tonsillitis, with tonsillectomy, in 1922, and chronic appendicitis for several years without having an operation.

She had felt weak and nervous since the tonsillectomy in 1922. In October, 1923, while in school, she began having an eruption on the thighs and the knees and later on the arm, splotches of rash with raised red spots, itchy at first, lasting half an hour. About noon she usually felt weak and became more nervous until she ate something. This was worse if she had eaten a light breakfast.

Examination.—The patient was slender and undernourished. The teeth and gums were normal; the tonsils had been removed; the eyes were normal. There was a slight fulness in the region of the thyroid. The heart, lungs and abdomen were normal. No skin lesion was present at the time of the examination. The pulse was 84. The blood pressure was: systolic, 110; diastolic, 70; pulse, 40. Her weight was 96 pounds (43.5 kg.); height, 5 feet 5½ inches (153.6 cm.), the standard weight being 132 pounds (59.9 kg.).

Urinalysis revealed: specific gravity, 1.020; albumin, 0; sugar, 0; indican, 0; the microscopic examination was negative.

The hemoglobulin was 80; red cells, 3,754,000; white cells, 13,200; polymorphonuclears, 62 per cent.; small lymphocytes, 24 per cent.; large lymphocytes, 12 per cent.; eosinophils, 1 per cent.; basophils, 1 per cent.; no malaria. There was no occult blood in the feces, and microscopic examination was negative. The Wassermann reaction was negative. The blood sugar at noon, when the patient was fasting, was 0.056.

Gastric analysis, fractional, revealed:

Total acidity:	12	30	40	52	55
Free hydrochloric acid:	0	12	25	45	45

On roentgen-ray examination, the heart and lungs were seen to be normal. Gastro-intestinal examination showed the stomach 3 inches below the umbilicus; there were no filling defects; there was normal motility and no stasis in twenty-four hours.

No pathologic diagnosis was made. The functional diagnosis was hyperinsulinism, hyperchlorhydria, and visceroptosis.

The etiologic factors were heredity and overwork.

Treatment and Result.—The treatment consisted in hyperalimentation, including a pint of milk every three hours. There have been no symptoms since the increase in the diet.

CASE 5.—*History.*—R. M., a white man, aged 59, a manufacturer, married, with four children, three of whom were living, seen March 6, 1924, complained of an uncomfortable feeling in the stomach and a gnawing sensation, and said that at times it felt like a vacuum. Taking food relieved this sensation for about two hours, solid food giving a longer period of relief. Three or four hours after meals the distress came on again. He suffered from weakness and constipation. He was in the habit of eating fruits before retiring.

His mother, who was alive, aged 84, had apoplexy; his father died of erysipelas.

He had always been rather a large eater, eating rapidly; the diet consisted largely of meats, eggs, vegetables and carbohydrates. He had used tobacco excessively, but no alcohol.

The patient had had the usual diseases of childhood, with mild bronchitis nearly all his life. In 1887 he had malaria and a nervous breakdown, using morphin for eighteen months. In 1874 he had spinal meningitis, with a good recovery. In 1884 he had gallbladder trouble and gallstone colic five times each year until 1904. In 1907 he had a fall, with an injury to the lower part of the spine, which crippled him for three years.

Two years before, he had a distressed feeling in the stomach, associated with slight pain. The indigestion became worse, so that for nine months he lived on a strict diet, but he did not improve very much. For the past two months he had been eating liberally and had not felt any worse. He now complained of a distressed, empty feeling in the epigastrium in a circumscribed area of 5 inches, coming on from two to three hours after meals; he was nearly always relieved by eating or taking soda, which caused an expulsion of gas. He felt all right when lying down. He was nauseated occasionally. He had gas and fulness and constipation. He was weak and had lost 34 pounds (15.4 kg.) in two years.

Examination.—The patient had pterygium of both eyes; many bridges in the mouth and gum irritation; small cryptic embedded tonsils; the thyroid was normal. The heart and the lungs were normal, except for an accentuated aortic sound, with tenderness above and below the umbilicus. The pulse was 72; the blood pressure was: systolic, 220; diastolic, 115; pulse, 105. His weight was 151 pounds (68.5 kg.); height, 5 feet, 8 inches (172.7 cm.), the standard weight being 162 pounds (73.5 kg.).

Urinalysis revealed: specific gravity, 1.025; albumin, negative; sugar, negative; indican, a trace; bile, a trace; a few pus cells; no casts.

The hemoglobulin was 80; red cells, 4,056,000; white cells, 8,200; polymorphonuclears, 62 per cent.; small lymphocytes, 36 per cent.; large lymphocytes, 1 per cent.; eosinophils, 1 per cent.; transitionals, 0.1 per cent.; no malaria. There was a trace of occult blood, but no parasites, in the feces. The Wassermann reaction was negative; the blood sugar when the patient was fasting at 11 a. m. was 0.067; and 1 p. m., two hours after eating, 0.077.

Fractional examination of the gastric contents after an Ewald test breakfast revealed:

Total acidity:	25	40	60	50
Free hydrochloric acid:	20	25	30	20

A roentgen-ray examination of the heart and the lungs showed them apparently normal. A gastro-intestinal tract examination showed a slight filling defect in the duodenal bulb near the pyloric ring and a hypertonic stomach 2 inches below the umbilicus. There was no six-hour residue. After twenty-five hours the barium meal occupied the colon from the cecum to the splenic flexure. The appendix was not seen.

The pathologic diagnosis was arteriocapillary fibrosis; a suggestion of duodenal ulcer; chronic cholecystitis; probable chronic pancreatitis; chronic tonsillitis, and oral sepsis. The functional diagnosis was arterial hypertension; slight hyperchlorhydria; hyperinsulinism, and intestinal toxemia. The patient was underweight 11 pounds (5 kg.).

The etiologic factors were infection from the teeth and the tonsils; an excessive use of tobacco; rapid eating; an excessive diet of meat and starchy foods, and overwork.

Treatment and Result.—Rest was advised and bromids, belladonna and laxatives were prescribed. Removal of the tonsils was advised. The patient lived some distance from Birmingham, and we have had no report from him.

804 Empire Building.

"OPTIMAL" DIETS FOR DIABETIC PATIENTS *

RUSSELL M. WILDER, M.D.
ROCHESTER, MINN.

In 1910, Woodyatt [1] suggested, in explanation of the ketolytic action of glucose, that 1 molecule of acetoacetic acid might react with 1 molecule of alcohol or glucose and thus undergo oxidation at the expense of the simultaneous reduction of the glucose. This assumption was based on analogy with the observed behavior of ketones and alcohol when these were exposed to bright sunlight, as had been reported by Cimician and Silber, and is in harmony with what is known of the behavior of the acetone bodies in metabolism. Although Geelmuyden [2] can be credited with an earlier hypothesis of intermolecular chemical reaction between the acetone bodies and glucose, Woodyatt was responsible for stimulating much of the investigation of this subject. Geelmuyden proposed a conjugation of glucose and the acetone bodies, a view with which Ringer's [3] hypothesis of ten years later harmonized.

The demonstration by Shaffer,[4] in 1921, of an in vitro analogy to the ketolytic action of glucose accelerated the recent activity in this field of study. The oxidation of glucose in alkaline solution by hydrogen peroxid was found to remove acetoacetic acid if the latter was present in the solution. Fructose and glycerol exerted the same effect, but lactic acid did not. The ketolytic action increased with alkalinity and temperature, suggesting that dissociation of the glucose into some more reactive derivative was essential to the reaction.

In a communication that accompanied the publication of these purely chemical investigations, Shaffer reported the results of calculations of the balance of ketogenic (fatty acid) and ketolytic (glucose) molecules in various human subjects who, by reason of fasting, fat feeding or diabetes, were excreting acetone, and concluded that the molecular ratio of ketogenic to ketolytic substances must be 1:1 or less, in order to avoid ketonuria.

A few months later, Woodyatt [5] published his paper, "Objects and Method of Diet Adjustment in Diabetes," in which he proposed that diets for diabetic patients should be adjusted in carbohydrate, protein and fat, to make the ratio in grams of fatty acids to glucose 1.5:1

---

* From the Division of Medicine, Mayo Clinic.

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Woodyatt, R. T.: The Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis, J. A. M. A. **55**: 2109-2112 (Dec. 17) 1910.

2. Geelmuyden, H. C.: Ueber den Acetongehalt der Organe an Coma diabeticum Verstorbener nebst Beiträgen zur Theorie des Acetonstoffwechsels, Ztschr. f. Physiol. Chem. **41**: 128-152, 1904.

3. Ringer, A. I.: Theory of Diabetes with Consideration of the Probable Mechanism of Anti-Ketogenesis and the Cause of Acidosis, J. Biol. Chem. **17**: 107-119, 1914.

4. Shaffer, P. A.: Antiketogenesis, I, An In Vitro Analogy, J. Biol. Chem. **47**: 433-448 (July) 1921; II, The Ketogenic-Antiketogenic Balance in Man, ibid. **47**: 449-473 (July) 1921; III, The Ketogenic-Antiketogenic Balance in Man and Its Significance in Diabetes, ibid. **54**: 399-441 (Oct.) 1922.

5. Woodyatt, R. T.: Objects and Method of Diet Adjustment in Diabetes, Arch. Int. Med. **28**: 125-141 (Aug.) 1921.

(FA/G = 1.5). By this ratio, he expressed in grams the same proportion of ketogenic to ketolytic substances as was indicated by Shaffer's molecular ratio of 1:1. He used the term "optimal diets" to describe such appropriately balanced food mixtures, and, working with diabetic patients under conditions in which the proportion of foodstuffs in the diets probably corresponded with those actually engaging in metabolism, he observed that acetone appeared with considerable frequency when the gram ratio of 1.5:1 was exceeded. Woodyatt's discussion of the theory of properly balanced diets was logical and clear, attracting widespread attention; and, since its publication, his formulas for calculating "optimal diets" have been adopted in many clinics, and a large number of clinicians, including McCann,[6] Evans,[7] Richardson[8] and very recently McCrudden,[9] have accepted the ketogenic-antiketogenic molecular ratio 1:1 (Woodyatt's gram ratio FA/G = 1.5) as representing the upper limit of safety in fat feeding.

However, Woodyatt himself was not insistent on the inviolability of his figure 1.5, and left the question of the actual ketogenic threshold open for further study. His purpose was more to expound the general principles involved in properly balanced diets for diabetic patients, and this he accomplished so effectively that the subject has become one of general interest to the profession at large. Actually, small excretions of acetone may occur even when proportionately more glucose is being burned than the Woodyatt ratio allows; on the other hand, diets with relatively less carbohydrate than those proposed by Woodyatt may be used without provoking a ketosis of clinical significance. Proportionately higher fat diets than Woodyatt's may even control a preexisting ketosis.

Zeller's[10] experiments, in 1914, frequently quoted of late, suggested, as Lusk pointed out, that acetone formation is prevented so long as a molecular ratio of 2:1 is not exceeded, which, expressed in grams, as in Woodyatt's formula, would be a ratio of 3:1. In 1920, Ladd and Palmer[11] reported similar observations. Petren's[12] diets of almost pure butter fat often controlled preexisting ketosis instead of intensifying acetone production, and the same was true of the very high fat mixtures of Newburgh and Marsh.[13] It could be maintained, however, that these observations were made without adequate control of the total metabolism of the subjects, and that some of the foods were stored so that the proportions of fatty acid and glucose actually metabolizing when these high fat diets were ingested were not those of the diets. These objections were met by Wilder, Boothby and Beeler,[14] and by Wilder and Winter[15] in 1921. In a series of metabolism experiments on both diabetic and nondiabetic subjects, precautions were observed so that the proportion of foodstuffs actually burning could be calculated with reasonable reliability. Insignificant ketosis was provoked when the ketogenic molecules in the metabolizing mixture were twice as numerous as the glucose molecules. Also preexisting ketosis was controlled when the molecular ratio was approximately 2. On this basis, we concluded that the ratio between ketogenic and glucose molecules at the threshold of ketogenesis was 2:1, and so reported it at the 1921 meeting of the American Society of Biological Chemistry. Shaffer,[4] in the meantime, as a result of further chemical and clinical studies, had revised his original conclusion as to the ratio, and at the same meeting stated that "each molecule of glucose was shown to be ketolytic for two molecules of acetoacetic acid."

As our conclusions were in harmony with Shaffer's revised ratio, a scheme of dietary management was proposed[16] which, while based on the principles enunciated by Woodyatt, differed from his "optimal diets" in several respects. The foodstuffs were proportioned so that the ratio of ketogenic to glucose molecules would be about 1.7:1 (FA/G = 2.5). This was somewhat below the threshold ratio of 2:1, but considerably above the molecular ratio of 1:1 (FA/G = 1.5). Greater emphasis was placed on the importance of gaging the total calories to be fed by the metabolism of the patient, and it was proposed that the estimation of the number of calories required by the patient for maintenance be determined from Du Bois[17] standards of normal metabolism based on surface area in relation to age and sex. When the patient is up and about, an appropriate increase in food is made to meet the estimated muscular exertions of the patient. Feeding in excess of this is luxus, which in all probability is harmful; and feeding less than maintenance requirements will invalidate the calculations of the proportions of ketogenic and ketolytic substances, since any difference will be made up by the consumption of body fat. Reasonable protein restriction was also included in the plan. This is in harmony with the practice of Petren and that of Newburgh and Marsh, and is abundantly justified by our own experimental observations.

In order to simplify the calculations involved in solving formulas, charts were prepared which are easily manipulated, so that, if a patient's height, weight, age and sex are known, the total number of calories for maintenance at rest, and the distribution of these between carbohydrate, protein and fat can be read at a glance. This chart was placed in the hands of the dietitian, and the patients in St. Mary's Hospital were placed on their basal diet, the morning after admission. This system was introduced during the summer of 1921. Since then, many more than 500 patients have been treated in this manner, and we have yet to see serious acidosis that could be attributed to the diet.

As the result of this large experience, we are convinced that rigid carbohydrate restriction and relatively high fat feeding are entirely safe for the "well diabetic," if a patient who is free from severe infections and other acute complications may be thus characterized. It has

6. McCann, W. S.; Hannon, R. R.; Perlzweig, W. A., and Tompkins, Edna H.: Studies of Diabetes Mellitus, II, Results of Treatment by Diet Adjustment with Reference to Maintenance Requirement and the Ketogenic-Antiketogenic Balance, Arch. Int. Med. **32**: 226-258 (Aug.) 1923.

7. Evans, F. A.: A Method of Establishing Diabetic Patients on High Calorie Diets with a Ketogenic-Antiketogenic Ratio Within the Limits of Safety, Am. J. M. Sc. **166**: 106-113 (July) 1923.

8. Richardson, H. B., and Ladd, W. S.: Clinical Calorimetry, XXXIV, Ketosis and the Respiratory Exchange in Diabetes, J. Biol. Chem. **58**: 931-968 (Jan.) 1924.

9. McCrudden, F. H.: Simple Diet Charts for Diabetes of All Grades of Severity, J. A. M. A. **82**: 356-359 (Feb. 2) 1924.

10. Zeller, H.: Einfluss von Fett und Kohlehydrat bei Einweisshunger auf die Stickstoffausscheidung, Arch. f. Physiol., 1914, pp. 213-236.

11. Ladd, W. S., and Palmer, W. W.: The Carbohydrate-Fat Ratio in Relation to the Production of Ketone Bodies in Diabetes Mellitus, Proc. Soc. Exper. Biol. & Med. **18**: 109-110, 1920; Fat-Carbohydrate Ratio, Tr. A. Am. Phys. **36**: 266-268, 1921; The Use of Fat in Diabetes Mellitus and the Carbohydrate-Fat Ratio, Am. J. M. Sc. **166**: 157-159 (Aug.) 1923.

12. Petren, K. A.: Diabetes studier särskilt rörande ett av mig utbildat dietetiskt förfarande för behandling av den grava diabetes, Kopenhagen, Glydendal, 1923, 958 pp.

13. Newburgh, L. H., and Marsh, P. L.: The Use of a High Fat Diet in the Treatment of Diabetes Mellitus, Arch. Int. Med. **26**: 647-662 (Dec.) 1920.

14. Wilder, R. M.; Boothby, W. M., and Beeler, Carol: Studies of the Metabolism of Diabetes, J. Biol. Chem. **51**: 311-357 (April) 1922.

15. Wilder, R. M., and Winter, M. D.: The Threshold of Ketogenesis, J. Biol. Chem. **52**: 393-401 (June) 1922.

16. Wilder, R. M.: Optimal Food Mixtures for Diabetic Patients, J. A. M. A. **78**: 1878-1884 (June 17) 1922.

17. Du Bois, Delafield; and Du Bois, E. F.: Clinical Calorimetry, X, A Formula to Estimate the Approximate Surface Area if Height and Weight Be Known, Arch. Int. Med. **17**: 863-871 (June) 1916.

never seemed wise to employ such diets when there was infection, and I have hesitated to use them when there was a preexisting severe diabetic acidosis. In the case of a few patients who have been the subjects of special investigation, a preexisting acidosis has been controlled by this dietary procedure, but my general impression is that such conditions are treated more effectively by temporary underfeeding and small doses of carbohydrate.

Recently, additional experimental evidence has been obtained in support of the belief in the general safety of high fat diets. In cooperation with Boothby and K. Sandiford, a prolonged metabolism study is being conducted, with a "well diabetic" as the subject. Observations of the respiratory metabolism and of all the pertinent changes in the urine and blood have been continued for five months; and since the subject has retained weight and nitrogen equilibrium, the total metabolism is known and the ketogenic-antiketogenic ratio can be calculated with much greater accuracy, we believe, than ratios based on respiratory quotients obtained in short experiments, such as those reported by Richardson.[8] For certain periods of the experiment, the molecular ratio has been as high as 3:1, and with this ratio on occasions, acetonuria has equaled what it should be by Shaffer's calculations: 20 gm. daily when expressed as hydroxybutyric acid. Yet this ketosis has not been accompaned by acidosis, the alkali reserve remaining normal, and the patient has felt perfectly well all the time. There has been nothing unusual in this diet from the standpoint of mineral acid or base content, and insulin has not been used. The ammonia excretions have been approximately 4 gm. daily and, therefore, theoretically sufficient to neutralize the acetone bodies as formed. The diets were purposely planned to provoke ketosis, being very low in carbohydrate (15 gm. or less) and very high in fat. When less than 5 gm. of carbohydrate was fed, the excessive fat became nauseating, and such diets could not be maintained for more than twelve days. It would seem, however, that only a very small amount of fresh green vegetables would be necessary to protect against the fat intoxication described by Allen.[18]

The significance of the results obtained thus far is twofold. First, the fact that the yields of hydroxybutyric acid agree so well with the excretion predicted by Shaffer's revised method of calculation supports the opinion that the molecular ketogenic threshold ratio actually is 2:1. Second, the fact that, when the ratio is as high as 3:1 and the daily oxybutyric acid excretion is 20 gm., no actual acidosis develops, indicates that when the ratio is held below 2:1 as in our clinical diets, a considerable margin of safety is secured. Incidentally, the blood sugar of this patient, which was as high as 275 mg. for each 100 c.c. before these studies commenced, remained at a normal level, between 87 and 113 mg., during months of excessive fat feeding, and the basal metabolic rate remained continuously at a normal level during long periods of ketosis.

These experiments with extremely high fat diets, revealing as they do that a molecular ketogenic ratio of 3:1 may be borne without inconvenience, suggested that the development of diabetic coma must involve extreme limitation of the ability of the organism to utilize glucose, and that such depressions of glucose tolerance are not likely to be provoked by excessive fat feeding. It has been my experience, in fact, that diabetic acidosis and coma arise either from an acute complication such as an infection, or from a dietary indiscretion, usually in the consumption of carbohydrate (candy) or protein, rarely of fat. The serious case of Bessie B., reported from our clinic,[14] is an illustration; the patient twice developed a true acidosis and symptoms of impending coma when her metabolism was stimulated by a high calory diet containing 3 gm. protein for each kilogram of body weight, while diets higher in fat but lower in protein were tolerated much more satisfactorily. Such observations are in complete harmony with the experience of Petren and with that of Ladd and Palmer. The conclusion as to the comparative harmlessness of high fat diets is furthermore supported by the recent work of the nutritional biologists. Frank[19] of Leipzig, Osborne and Mendel,[20] and Smith and Carey[21] have independently reared white rats to normal maturity on diets containing from 80 to 85 per cent. of fat calories and minimal amounts of carbohydrate. Smith and Carey's results were the least satisfactory, Osborne and Mendel's the best. Osborne and Mendel conclude that the carbohydrate required for the metabolism of fats and for the development of energy in muscular contractions can be furnished endogenously throughout the period of growth.

The term "optimal," as applied to appropriately balanced, high fat, low carbohydrate diets, serviceable as it has been in directing attention to the principles involved in preventing ketosis, has unfortunately carried the implication that such diets are necessary and best for the treatment of all types and conditions of diabetes. I have already indicated, but wish to reiterate, that it is of doubtful wisdom to use such diets for a patient who has an acute complication or a preexisting severe acidosis. My associates and I have previously furnished evidence that even mild infections favor acetone formation, and suggested that the threshold of ketosis may be lowered by complications. For this reason it is our practice to feed less fat and proportionately more carbohydrate under such circumstances, or to resort temporarily to a fast, broken only by small doses of orange juice. Fortunately, the introduction of insulin has relieved us from depending on dietetic and other less specific measures in these serious conditions.

Furthermore, insulin now obviates the former necessity of continuous rigid carbohydrate restriction, such as we heretofore advocated. We still employ diets based on an estimated basal metabolism and apportioned on a molecular ketogenic ratio of 1.7:1 (FA/G gm. ratio 2.5) with 0.66 gm. of protein for each kilogram of body weight, but we now use such diets only for controlling glycosuria and determining tolerance. Later, we deviate from this regimen, and in planning the patient's work diet, provide more calories, more protein, and more carbohydrate as follows:

DIETARY PLAN

When a patient is admitted to the hospital, he is seen at once by the house officer, and if there is no acute complication the routine management is instituted without delay. The patient is kept in bed, and is immediately started on the optimal diet as calculated by our diet card. He fasts on the fourth day, and then resumes the diet for four days, quantitative determinations being

18. Allen, F. M.: Experimental Studies in Diabetes, Series V, Acidosis 2, Fat Intoxication, J. Metabol. Res. **3**: 797-813, 1923.

19. Frank, O.: Tierexperimentale Untersuchungen über Fetternährung, Monatschr. f. Kinderh. **24**: 487-492, 1923.

20. Osborne, T. B., and Mendel, L. B.: Carbohydrate Deficient Diets, J. Biol. Chem. **59**: 13-32, 1924.

21. Smith, A. H., and Carey, E.: Growth on Diets High in Carbohydrate and High in Fat, J. Biol. Chem. **58**: 425-433 (Dec.) 1923.

made daily of the sugar and nitrogen in the urine. If the case is not severe and the patient becomes sugar-free on or before the fast day, extra carbohydrate, such as white bread, is given during these four days to insure some glycosuria. The dietetic and laboratory data now provide a measure of the patient's tolerance; the average daily glucose excretion subtracted from the glucose value of the metabolizing foodstuffs represents the grams of sugar the patient utilizes under these standard conditions. The glucose value of the foods metabolized is calculated by adding the carbohydrate grams fed, 10 per cent. of the fat grams fed, and the sugar derivable theoretically from protein catabolism. This proteidic sugar is obtained by multiplying the grams of urinary nitrogen by the factor 3.7, rather than by taking 58 per cent. of the protein grams fed, since many diabetic patients have a negative nitrogen balance, when they present themselves for treatment, and catabolize more protein than is included in the diet. When the tolerance is thus determined, the larger diet necessary for working conditions, together with the necessary insulin dosage, can be planned with considerable precision, allowing 1 unit of insulin for every 2 gm. of glucose derivable from the extra food in the larger diet.

I believe that, if insulin is to mean anything at all to farmers and working people, it must provide them with the strength necessary to continue at their usual gainful occupations. Therefore, the patient's occupation must receive consideration in determining the number of calories he is to receive at home. For a person leading a sedentary life, an increase in calories of 30 per cent. over the basal requirement will often be sufficient; in the case of the farmer, the increase must be as much as 60 or 80 per cent. In the work diet we allow 1 gm. of protein for each kilogram of body weight, and enough carbohydrate to give the diet a total glucose value of from 100 to 120 gm.

We are now treating certain early, mild cases of the acute progressive type of diabetes by this rigid dietary plan, and administering insulin. This acute progressive type of diabetes Falta [22] calls the malignant type. With it increasing severity is to be anticipated and, if possible, prevented. In mild, nonprogressive cases, particularly in the vascular and obesity types of diabetes, such rigid management and insulin are not indicated. "Optimal" diets are neither necessary nor best for such patients, except temporarily for the quick control of a glycosuria resulting from gross dietary indiscretion. These patients do not require insulin, and rigid dietary restriction often works an unnecessary hardship. It is frequently possible in benign cases to obtain satisfactory results with diets that the patient selects at will, observing only abstinence from sweets and appropriate limitation of meats, fish and breadstuffs; this avoids the inconvenience of calculating and weighing food. It is important, in advising patients with the mild type of the disease, to emphasize the limitation of protein as well as carbohydrate.

CONCLUSIONS

1. Small amounts of acetone may be excreted by diabetic patients when the ratio between ketogenic molecules (fatty acids) and ketolytic molecules (glucose) in the food mixture metabolizing is below 2:1. Under such conditions, however, the daily excretion of acetone bodies, while sufficient for the urine to react in a weakly positive manner with sodium nitroprussid or ferric chlorid, seldom exceeds 1 gm. This is, therefore, clinically unimportant. Such small excretions may be obtained when the molecular ratio is below 1:1 (Woodyatt's $FA/G = 1.5$). When the molecular ratio 2:1 is exceeded, severe ketonuria rapidly develops. The threshold of ketogenesis is, therefore, indicated by the molecular ratio 2:1, which, translated into the gravimetric expression, would be $FA/G = 3$.

2. It is improper to assume that the diet represents the food mixture metabolizing unless it is constructed to conform closely with the minimal caloric requirement of the patient. If the food calories are in excess of this requirement, certain substances may escape immediate oxidation; and, vice versa, if the food calories are inadequate, the deficiency is met by food materials, chiefly fat, withdrawn from the tissues. Diets containing 0.66 gm. of protein for each kilogram of the patient's weight, and adjusted to the patient's caloric need and proportioned so that the molecular ketogenic ratio is 1.7:1, have been given to more than 500 patients with uncomplicated diabetes, without once provoking serious acidosis.

3. The factor of safety in carbohydrate restriction and high fat feeding is greater than was formerly considered possible, because the organism may adjust itself to a considerable ketosis and avoid actual acidosis. This it does mainly by neutralizing the acetone acids with ammonia.

4. In the presence of acute complications, the ketogenic threshold may be lowered, and it is wise, under such circumstances, to feed more carbohydrate and less fat.

5. Although the introduction of insulin has obviated the necessity for very rigid carbohydrate restriction, the consideration of the ketogenic ratio of diets, as first recommended by Woodyatt, is of great value in planning suitable regimens for patients requiring insulin.

6. Neither the rigidity of the diet nor the administration of insulin should be in excess of the needs of the individual patient.

22. Falta, W.: Die Mehlfrüchtekur bei Diabetes mellitus, Berlin, Urban and Schwarzenberg, 1920, p. 149.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JOSLIN, HARRIS, AND WILDER

PROF. KARL PETREN, Lund, Sweden: There is one point in the problem that Dr. Joslin has brought up which I would like to emphasize, and that is the importance of giving only a small amount of insulin. I visited the Toronto workers, a few days ago, and McLeod demonstrated how the effect of insulin becomes less and less per unit as the amount of insulin is increased. The point is that the effect of a small amount of insulin per unit can be twenty times as great as a greater amount. Therefore, we must try always to keep to the smallest possible amount. As to the question of the greater frequency of diabetes, I have a different impression from the clinical one, and so I am a little skeptical; but, certainly, if diabetic patients are living to a greater age, one is right in saying that there are more diabetic patients. But the grounds on which we are basing statistics must be accurate, and we should take a long time before coming to a conclusion as to the frequency of the disease. Patients have changed in regard to age and to severity of cases. People now go to a physician to find out whether they have the disease or not, but my impression is that the frequency is about the same as before. I believe that other diseases must be studied in comparison to understand the influence of diet in this disease. I believe that severe diabetes must be considered as having a hereditary element, the units of mendelian factors having a bearing on this question as they do in hereditary diseases of the nervous system; for example, in such diseases as heredospastic paralysis, Friedreich's ataxia, or heredofamilial idiocy. These are due to the amount of vitality of the units of Mendel: the patient reaches

a certain age and the vitality is not enough in certain respects; therefore, disease gains ground. In this case, the islands of Langerhans have not enough vitality, so that when the patient reaches a certain age the disease appears.

DR. W. M. BOOTHBY, Rochester, Minn.: Dr. Harris draws the conclusion that hyperinsulinism may be the forerunner of diabetes, just as hyperthyroidism is sometimes the forerunner of myxedema. I was much interested in Dr. Harris' opinion in regard to the possibility of hyperinsulinism; on the other hand, the analogy was rather unfortunate in regard to hyperthyroidism and myxedema, as we have had under observation 100 carefully studied cases of myxedema, and in not a single instance had hyperthyroidism or exophthalmic goiter preceded the myxedematous condition. One of the main points in Dr. Wilder's paper is the correction of the misunderstanding in regard to the term "optimal diet." It is unfortunate that this phrase carried with it the implication that all patients should be restricted to a high fat diet based on a keto-antiketogenic ratio. This is not the case, and it is well to emphasize once more that not all patients should be put on the so-called "optimal diet."

DR. DON DUFFIE, Central Lake, Mich.: Dr. Wilder has mentioned his desire to have patients eat what they like, so far as possible. The patients enthusiastically applaud. We have devised a little mechanical system for making this more possible. We call it the diabetic slide rule. It works with our patients. It is not patented; you might like it. It makes a dietitian out of any one, regardless of education, in five minutes' time. The patient selects his entire menu to suit himself, yet easily arrives at the almost exact number of grams of protein, fat and carbohydrate assigned by his physician. It enlists his interest, and sustains his attention in the weighing of food. He comes to feel that he is running the thing, sees method in your madness, becomes cooperative instead of antagonistic. The whole idea of diabetes begins to be tangible to him. He gets interested in the books. The slide rule has three slides, showing grams of protein, fat and carbohydrate, respectively. Then, there are a series of cards. Each card represents one serving of food. One, say is 30 gm. of oatmeal. There are three slots in the card. The length of these slots is proportionate to the grams of protein, etc., in that serving of food. The slots in the cards are what move the slides in the rule, making an adding machine of it. The physician has set certain marks on the rule, for the patient's daily totals. The patient selects cards of food he would like to eat, then proceeds to see how closely they hit the marks. He may think he will take potato. He quickly sees why he cannot take much of that—nothing about carbohydrate—it merely has too long a "C" slot. But he sees why he can have lots of vegetables, for those cards have such tiny little "C" slots: they never would fill up the space. He notes that the mark on the fat column is set at a high figure. To arrive at this mark, it is evident to him that he will need some cards having long "F" slots, such as the one labeled "cream, 4 ounces." And so, instead of a bewildering puzzle, bristling with unknown words, the diet becomes a simple card game; literally, child's play. They like it.

DR. SEALE HARRIS, Birmingham, Ala.: Dr. Boothby's observation that hyperthyroidism may not be a precursor of hypothyroidism is not borne out by the observations of others. I recently looked up the literature on the transition from hyperthyroidism to hypothyroidism, and found frequent mention of the change. As to the etiology of hyperinsulinism, I think that, in some cases, it is due to a chronic pancreatitis resulting from infections of various kinds, just as diabetes or hypoinsulinism is probably due to infection of the pancreas in the large proportion of cases. The infection may come from tonsils or teeth, and I think frequently from the colon. As to syphilis, we did not have any positive Wassermann reaction in the group of patients that we think had symptoms of hyperinsulinism. I think that the prevention of diabetes is largely a dietary matter. I believe that it is a question of the quality as well as the quantity of the food, a deficiency of vitamins, as compared to the diet of twenty-five years ago. This is the case not only in diabetes but also in all abdominal diseases. McCarrison, in his work in the Himalayas, showed that intestinal stasis and colitis were a frequent cause of abdominal infections, and the work of MacCollum would seem to show that vitamin deficiency plays a large part in lowering resistance to infections of the pancreas and all other organs of the body. In regard to hyperinsulinism being a precursor of obesity and diabetes, in hyperinsulinism there is a hypoglycemia with hunger reaction, and that causes the patient to eat an increased amount of food, which adds to the work of the pancreas and exhausts the cells of the islands of Langerhans. The excessive use of any organ or gland is followed by deficiency of secretion in the gland for short or long periods of time.

DR. R. C. LOGEFEIL, Minneapolis: What do you consider the optimal blood sugar reading? Do you depend on the blood sugar estimations or on the clinical findings in judging hyperinsulinism?

DR. SEALE HARRIS: Nearly all of the twelve cases in which the blood sugar was below 0.07 showed symptoms analogous to the syndrome resulting from an overdose of insulin. In making the diagnosis of hyperinsulinism, we consider both the symptoms and the hypoglycemia. The optimal blood sugar reading is from 80 to 120 mg. of sugar to 100 c.c. of blood, or, expressed in percentages, the optimal blood sugar readings range from 0.080 to 0.120.

DR. S. B. MCKERRIHAN, Portsmouth, Ohio: In the last four or five years, it would seem that people have been eating more candy, and also consuming large quantities of products made from sugar, such as soft drinks and confectionery.

DR. RUSSELL WILDER, Rochester, Minn.: I should like to congratulate the inventor of the "diabetic slide rule"; I think this is a very ingenious method of instructing the patient and getting his cooperation. It is always difficult to give a dietary prescription in terms of actual food, and I think that this rule should prove a most useful aid. Eppinger has suggested the possibility that hyperpancreatism may explain some cases of exogenous obesity. I do not think that the evidence is conclusive, but I am very much interested in Dr. Harris' observations.

DR. ELIOTT P. JOSLIN, Boston: I believe that the reason for the diabetic tendency of the Jews, is that they take too much food and too little exercise. I do not think that it is a question of the kind of food. In China, diabetes is not common, and these people use a preponderance of starchy diet. In Japan, more sugar is eaten and diabetes is more common. However, I do not think that it is so much the kind of food as it is the amount of food. If we prevent a gain in weight, we shall accomplish more. Treatment of diabetes is simple and easy in the country town, and can be carried out if the physician will take pains. Any measure or contrivance that will simplify treatment is to be welcomed. My patients average only ten days in the hospital, and then go outside Boston. They go to small towns and to the physicians in those towns. In that way they get along very well, but I should welcome statistics from other sources for comparison. The stay in the hospital influences the type of diet we prescribe for our patients. Professor Petren can keep his patients for weeks and months, so that he can give a certain diet. Newburgh and Marsh also keep patients under observation for a long time, and may partly account for their similar system. This is less the case at the Mayo Clinic with Dr. Wilder's patients, still less at the Peter Bent Brigham Hospital, with those of Dr. Fitz, and perhaps least of all at the New England Deaconess Hospital, Boston. Since our patients average only ten days, we must treat them conservatively. Therefore, we cannot afford to give them a high diet. I am content that the cases I have had under observation with insulin treatment for a year and a half have gained 15 per cent. I think that that is enough. Overfeeding the normal person predisposes to diabetes; overfeeding the diabetic patient predisposes to coma. Dr. Woodyatt has explained the manner in which more fat can be given safely than formerly. This has added two years to the lives of our patients. One must give as much carbohydrate as one can, and as much fat as one needs for weight while keeping the patient sugar free, giving at the same time enough (1 gm. per kilogram of body weight, more or less) protein for nitrogenous equilibrium.

THE TRAUMATIC NEUROSIS *

MILTON B. LENNON, M.D.
SAN FRANCISCO

A study of a series of industrial and nonindustrial accident patients presenting the symptoms of a posttraumatic neurosis shows the small part that trauma plays in such a condition.

When the individuals of this group are carefully studied, other facts are discovered that are vastly more important than the injury. Indirectly, this is proved by the great number of people who have sustained severe injury and who present no late neurotic symptoms. On the other hand, a trifling physical injury with no concomitant shock may be followed by a most deplorable psychic state. In short, there must be some peculiarity of the individual that causes him to react in an uncommon way after a greater or lesser injury.

This is borne out by an increasing experience with patients who have been so classified. When one is able to obtain an eminently satisfactory history from the patient, his early life, his problems and difficulties in his social sphere, his reaction to his environment, his attitude toward work, and above all an insight into his sexual life, there will always be found a man or woman who is decidedly neurotic.

In a group of forty-one patients who had been either under compensation or who had obtained final judgment in court procedures, this fact was always in evidence. Inquiry long after judgment was rendered and the patient had returned to work showed that, fundamentally, they were unchanged.

The group is necessarily small, because it is difficult to get a satisfactory history from all such patients. Nearly all of them claim that they were never sick prior to their injury. Physical findings may absolutely belie their statements. A social welfare worker may bring forth a host of facts that indicate the type with which we are dealing. Kindness and the expenditure of much time will usually lead the man to tell of his troubles and problems. In some instances, this history was obtained long after the man had returned to work. In short, it is profitable to follow the traumatized neurotic over as many years as possible, and get a full life story.

However, the patient is not the only factor. If others did not act, he would invariably recover from his injury without any severe neurotic reaction.

The fact of injury gives him time for reflection. He perhaps has worked long and hard. A common point with all such patients is their boastfulness of good work and uncommon achievement. In all, there is a desire for rest and relaxation. Necessity, however, has goaded them on to work. The injury gives an opportunity to be temporarily free. It does more than that: it evokes the sympathy of the wife and family, something perhaps denied the man for a long time. Finances become low, matters are discussed with family and friends, and the period of resentment now arises. A lawyer is ready to offer his services, and he does all he can to make the man feel that he has a just cause and should demand damages.

In the meantime, some physician has been in attendance. He stresses the trauma; he perhaps has given a lot of ill advised treatment; he lets his sympathy run away with his judgment and later appears as a witness on behalf of the man. Unhappily, he may even know and recognize the condition, and by stressing half truths make it appear that the injury was the sine qua non in the neurotic state.

By this time, the patient becomes obsessed by the desire to collect damages. The fact that a commission may ultimately give less than he could earn while the case is pending is rarely considered. Of the cases that come to court, the same can be said. Meanwhile, he develops a more and more injured air. Repeated examinations, the appearance before the court and commissions keep him upset, deprive him of sleep, and sway him between hope and fear.

During this time, it is utterly futile to try to treat him. He is not fighting for health but for a reward. When work is offered to him at his former place of employment, he stoutly maintains that he cannot work, yet he expends an immense amount of energy in attending hearings, finding witnesses and working up the endless details of his suit. He may even work elsewhere and justify it in his own mind. Or he may feel that working for himself is not really working, since it carries no direct payment. For example, an engineer did not feel that he could look after a boiler. He was able, however, to put in a long row of fence posts about his ranch. Another shingled his house. A Portuguese who had been at my office, complaining of weakness in his left arm, was driven by a social worker to another consultant. On leaving, a flat tire confronted them. The man quickly offered to change it and did so, forgetful of his arm. A man who had suffered a most severe electric shock and head concussion was supposed to be recuperating in the country, when he was working as a mate on a Standard Oil Company vessel. There was no doubt about his being a profound neurotic and a most fanciful liar. A giant of a fellow was able to run a ranch, ride a horse over rough country and go deer hunting, despite his claim of disability.

I do not adduce these few examples to show that these patients were pretenders. When their entire history is viewed, it is plain that they are not. These very acts indicate the peculiarities of their make-up.

The pertinent question is how to help such patients. With excellent welfare workers, much can be done to keep traumatized neurotics from developing a long train of symptoms. The man who is known as a trouble maker, the one who has domestic difficulties, the complaining types, the more or less unstable characters, should have the immediate aid of a neurologist when they are injured. An alert surgeon learns to measure such men, and will do all he can to avert the legal and social factors that lead to distressing sequelae. If the wife is seen early and given every assurance that her husband will recover and be returned to work at the first possible moment; if, better still, her cooperation is obtained, the man has no chance to develop a disabling neurosis. This method has served admirably at the Bethlehem corporation ship-building plant in San Francisco. In more than 6,000 accident patients, only five came before the industrial accident commission for final settlement. This is less than 0.1 per cent. of the total number. One of these five should have been avoided. The man had an ulnar injury, with the formation of a neuroma. This was removed, and he was turned over to a physiotherapist. After ten months, I saw him with a well recovered ulnar function, but with a glove anesthesia and a contracture of the extensors of the forearm. He did not belong in the usual category, since he was doing work all the time and reporting only to the physiotherapist. He was not, like others, under direct medical supervision.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

He was one of four who developed active symptoms of hysteria after injudicious physiotherapy. Unfortunately, not all patients are watched as closely as the Bethlehem employees. As a rule, the neurologist is consulted after a considerable period of time has elapsed, after casts have been applied, massage given, violet rays exploited, and every other conceivable means of suggesting disability has been used. His chief function is to make a diagnosis. He may be asked to treat the patient, and may make a futile attempt. If he is fortunate in getting a patient at a time when the interest of the family has subsided, and the wife is vigorously demanding that her husband get back to work, he may succeed. This is the rare exception.

It has been the experience of neurologists that the sense of disability terminates soon after damages are paid. The sooner this is done, the better. Unfortunately, it takes industrial commissions a long time to see the value of this procedure. Were they guided by a neurologic commission on the diagnosis, and a bulk sum equivalent to two months of compensation paid the patient, the matter could be quickly settled. After his return to work, further treatment might be offered to the patient. Few ever present themselves when such an offer is made. As far as they are concerned, the episode is closed.

Four patients were injured a second time. It seemed to be uppermost in their minds that the commission would pay little attention to their complaints. No sympathy was accorded them at home; their incapacity lasted from a few days to a few weeks.

One wonders why we still continue to use the term traumatic neurosis.

In court cases, it gives the lawyer an opportunity to convey to the jury an idea that is absolutely at variance with commonly accepted medical opinion.

The term compensation neurosis is more appropriate, but it too has its limitations. It stresses the fact, however, that compensation quickly terminates the period of idleness of the traumatized neurotic.

Fitzhugh Building.

ABSTRACT OF DISCUSSION

Dr. David S. Booth, St. Louis: This subject is doubly important to the physician, first, because of its scientific medical interest, and secondly, for his own personal safety. Every owner of an automobile is a potential defendant in a personal injury case. Furthermore, the average insurance does not cover the average amount of damages awarded in these cases. So I think that physicians should give a great deal more attention to this subject than they have been giving it, and they should be more careful in their testimony in these cases. We have too many pseudo-experts who obtain their knowledge from books which are largely traditional and contain such dangerous teaching as that "traumatic neurasthenia is a serious and disabling condition," not even distinguishing between the different degrees of neurasthenia. Cases of neurasthenia of traumatic origin are certainly responsive to treatment, and the experience of years on the part of those who have had most opportunity to observe a large number of damage cases conclusively proves that these patients do recover very soon, at times "disgracefully so," as I sometimes say in my reports on these cases, after compensation is allowed. Another point that has been brought to my attention in recent years is that these claimants soon dissipate their award and are almost objects of charity. Prevention is, I think, the mainstay in these cases. One should make a thorough and complete examination, after which one is in a position to give a positive diagnosis and prognosis. In regard to the industrial commission, I must say that the members of these commissions often have a more practical knowledge of these cases than does the average medical witness. The important thing is that they be not influenced in their decisions.

Dr. P. H. Hourigan, Buffalo: It is interesting how prevalent in this country is the idea expressed in regard to peculiarities developed in injured people. Last Friday I was invited by the Industrial Commission of the State of New York to attend a conference in New York City, and at that meeting Dr. Albee gave expression to about the same sentiments as those of Dr. Lennon. Dr. Albee called such cases attacks of "compensitis," which apparently, from the reaction of those present, was considered rather fitting. Yet, after injuries we do see every imaginable variable from the mental, moral, social, economic normal—traumatic neurosis or pseudo-hysterical phenomena, or whatever neurologists label them—when we are prone to feel that patients are malingerers or are developing "compensitis." We who are connected with corporations, as I am, believe that we are not justified in feeling that these people are malingerers, but rather that there is some real problem. After exhausting every possible advice and assistance to no avail, we may feel justified in being, not positive, but inclined to the belief that the case is possibly one of malingering. One such person could not walk up the church steps, but the next Sunday, after a $5,000 settlement had been made, he ran up the church steps. While patients get well after settlement, and, strangely, get well rather rapidly, I feel that we should be slow in deciding that the individual is a malingerer.

Dr. William A. Jones, Minneapolis: Until very recently I was out of court work for some time because I became convinced that it was a difficult problem to get a real straightforward, honest opinion in the majority of these personal injury cases. My belief is that the patients who are really injured receive compensation early, and those that fall into the hands of the compensation lawyer recover very slowly until compensation is received. In spite of the fact that the injury may be severe, such as a basal fracture, these people get well or at least get back to what they were originally. And this, I believe, is Dr. Lennon's important point—that in studying these people carefully we obtain a real view of their own life, of their method of thinking, and in the majority of instances they fall under the head of inferiority cases. The awarding of compensation, however, certainly is the best method of treatment. They get back to a joyous state with a bit of money, and they make substantial improvement. So far I have not been very much impressed with the efforts of the Industrial Commission of Minnesota. Doubtless it settles many cases that would otherwise be brought into court, but very often it falls short of its actual duty in bringing the case up at once, fixing the settlement, and paying it off. It lingers, just as does the compensation attorney. It hesitates because its members are politically appointed or affiliated with civic government, for that reason dragging the case along until it becomes really a serious problem for the patient. It is important, of course, to educate juries. Unless some good, straight facts are hammered into them, they are usually in sympathy with the patient, usually they award more than the necessary damages, and they forget altogether that these patients frequently recover after compensation has been issued. Then, too, we are up against the same old problem of the interested expert. He can see more in an injury than the average neurologist can see in a lifetime, and he testifies, according to his interests, for his attorney, because he is working on a compensation basis himself. I think the old plan that was tried out in Denmark the most successful. When a man was injured, he was promptly paid a stipulated sum and told to go to work, that he could have no more. And if in this country we could devise some such method for settlement with these unfortunate people, and have less of them appearing in court and before industrial commissions, it would be a good thing for all concerned.

Dr. Hugh T. Patrick, Chicago: This whole thing has been thrashed out these last twenty-five or thirty years. This situation was also handled in Germany, but it was badly done there; in fact, scandalously so in some cases. The law there perpetuated these cases year after year. I have

seen written expert opinions (*Gutachten*) stacked 6 inches high on one case, the patient having been in half a dozen hospitals under prolonged observation and in numberless dispensaries. I was interested to note a sort of international experiment on these patients in going from Germany to France. In Germany there were hundreds of thousands of disabled traumatized neurotics. In France there was no compensation for functional disorder and consequently in all of so-called neurotic France there were scarcely any of these traumatic neuroses.

DR. MEYER SOLOMON, Chicago: It seems to me that there are various factors to consider after an injury, particularly to a neurotic individual. Has an organic structural change resulted? Occasionally that does happen. Is there a functional, fatigue nervous disorder due to the trauma, not definitely with destructive organic change and not due to pure emotion? Is there an emotional condition causing reaction to the situation? What rôle does pure suggestion play? What degree of exaggeration is present? What degree of pure simulation is present? These are the factors to consider in each case that we see. We should individualize in each case, have an open mind, and evaluate these various factors in each and every case. In the average case of trauma it is not difficult definitely to exclude organic disease as a result of the accident. It is always best, no doubt, to settle the case immediately, but I do not believe that even in the pure neurosis cases it has been definitely proved that in all cases immediate settlement brings about disappearance of the symptoms. In some cases that is not true, and although it may clear up most and in many cases all of the symptoms, there are some cases in which the symptoms do persist. However, as has been brought out by the author, until the case has been settled, the physician treating it is in a peculiar position since he has not the whole-hearted cooperation of the patient and of the family; and without the sincere desire and the earnest cooperation of the patient, one cannot expect him to get well. But even after the case has been settled we may still have to handle it for a varying period, depending on the particular patient, and it is often, as we know, necessary to treat the family as well as the patient. It seems to me that in the average case coming before us after an injury we ought to investigate all findings and attempt to determine whether an organic change has taken place following the trauma, and consider all the elements entering into the case before making a decision.

DR. JOHN LEEMING, Chicago: I was very much taken with the title of the paper. On thinking about the matter it occurred to me that there are many people injured who are not neurotic, and I wondered whether, in referring only to traumatized neurotic patients, the author had in mind that the patient is not necessarily neurotic as a result of the trauma, but that he was neurotic before the injury. My experience in industrial board work and in nonindustrial cases is that the question as to whether the individual who is injured was previously neurotic has a great deal to do with the prognosis in these cases. Compensation, which is a very valuable means of cure in certain cases, is not so valuable in two types of patients: first, if the injured person was neurotic, and, second, when the injury has resulted in actual structural disease; in other words, when there is a real injury instead of an alleged injury. In industrial board cases a prior condition of neurosis is an unfortunate and difficult question to handle, because an injury that will not produce a definite and given effect purely as result of the trauma in a healthy person may possibly arouse some latent preexisting tendency and cause prolonged disability, not on account of the injury, but on account of the underlying defect. It is for this reason that many corporations in this city have gone to great extremes in having their employees examined to exclude persons with these underlying defects, recognizing, as does our industrial commission here, that if we aggravate the preexisting condition we are just as liable for the condition as if we had caused it. In one special case in which I was interested, I shall never forget the finding of the commission, which was something to this effect: The condition existing here was undoubtedly caused or aggravated by the injury. The defense that it may have existed previously or that the man was predisposed to it has no bearing on the disability, because the corporation which employed him either knew of his preexisting defect, or, if not, it was their business to have discovered it. In other words, it had no bearing on the disability; either they knew it or should have known it, and corporations are going to considerable length in examining men and excluding those who are predisposed to trouble. As to automobiles, we have no choice. We are liable to injure either a person predisposed to neurosis or a sound man. If he is a sound man, an honest man, compensation will often have a very beneficial effect, but if he is predisposed to neurosis, he will keep on suffering from the effects of the injury for an unlimited time.

DR. LESSER KAUFFMAN, Buffalo: We must not forget that many persons, whether they are primarily neurotic or become neurotic through the effect of injury, nevertheless do not recover even after settlement. All of us have seen such cases. There are certain neurotic persons made so by law; that is, the manner in which cases are handled in court undoubtedly aggravates the symptoms. In New York State, when an action is brought, two or three years elapse before the case comes to trial. It can readily be seen that a person with little money, whose friends or shyster lawyers advise him what to do, may be deleteriously affected by undue delay. If we had some means of trying these cases early, the matter could be settled without undue strain on the neurotic litigant. In regard to the matter of experts, unfortunately, we are all human, and when called into a case we may think we are right in favoring the side in which we are most interested. If we had for our experts competent, disinterested neurologists, employed and paid by the state, to determine the actual status of the patient, this would be a much better solution of the problem than the way it is handled at present.

DR. MILTON B. LENNON, San Francisco: In California we had a commission that I think was rather an excellent one. During the course of many years we had practically the same men serving on that commission. Recently there has been a change of mentalities because of the fact that we have a new governor and a new commission. In the course of years, the first commission had become fairly well trained. Different members of it were able to recognize a neurotic individual or a so-called traumatic neurosis; therefore the commission was able to settle cases with a certain degree of justice. Now we have a new commission, and if that commission is so fortunate as to serve ten or twelve years, we may again have a well trained commission. I particularly tried to show that if we carefully study patients over an extended period of time, eliciting every factor possible in their life history, we shall find that practically all of them were of the neurotic type and make-up. I endeavored to show that if patients who are recognized as nervous types were seen early and all the usual extraneous factors that make for disability were eliminated, we should then have a lessened number of patients coming up for final adjustment.

Migraine.—So far as the clinical picture of typical migraine is concerned, the main features were well recognized several hundred years ago. Aretaeus of Cappadocia, in the second century A. D., was the first to distinguish migraine from other forms of headache by drawing attention to its unilateral and paroxysmal character. Caelius Aurelianus (400 A. D.) described some of the visual symptoms and Alexander Trallianus (600 A. D.) the disturbances in gastric function, but it was not until 1725 that Vater drew attention to the characteristic hemianopia, and fifty years later that Mirabeau, whilst in prison at Vincennes, wrote the first of the long series of graphic descriptions of the visual phenomena, for which the medical profession is indebted to lay victims of migraine. Dr. Edward Liveing, later the distinguished librarian of the Royal College of Physicians of London, collected all that was known of migraine in a remarkable volume published in 1872, and in the fifty years which have elapsed since then very little of importance has been added to our knowledge of its symptoms.—Arthur F. Hurst: The Savill Lecture, *Lancet* 2:1 (July 5) 1924.

SPECTROSCOPIC AND CHEMICAL DEMONSTRATIONS OF OCCULT BLOOD IN THE FECES *

CHARLES D. AARON, M.D.

Professor of Gastro-Enterology and Dietetics, Detroit College of Medicine and Surgery

DETROIT

The finding of occult blood in the feces, when hemorrhage from the nose, mouth, throat, esophagus and hemorrhoids can be eliminated, is of the highest importance in the diagnosis of ulceration of the digestive tract. In conjunction with certain clinical symptoms, occult blood may be looked on as pathognomonic of ulcerating lesions of the stomach or the intestine. Moreover, in cases of gastric ulcer, occult blood in the feces is a most important objective symptom, for it not only clinches the diagnosis, but also indicates whether or not the ulcer is healing. During the treatment, a negative test for occult blood implies that the therapy is effective. The finding of occult blood is also the earliest and surest objective symptom in cases of carcinoma of the digestive tract. Bleeding from a carcinoma can be differentiated from bleeding from an ordinary ulcer by the fact that, in ulcer, the bleeding may stop, as shown by a negative test, while in carcinoma the bleeding is continuous and the test for occult blood is always positive. Since the finding of occult blood in the feces is so helpful in diagnosis, we require a technic that is at once simple, exact, and absolutely reliable.

Boas first used the term "occult blood" in 1901, and pointed out the diagnostic value of the test in cases of ulceration of the digestive tract. Various modifications of the original method of examination of the feces for occult blood have been made, to be highly praised at first, and then attacked, justly or unjustly, until all of them came to be looked on as unreliable. These various methods of occult blood testing may be divided into the spectroscopic and the chemical. The important point in any and all of them is that the preparations and instruments used must all be scrupulously clean.

The older spectroscopic tests were rather unsatisfactory, both because they were lacking in delicacy, and because the practitioner possessed neither the requisite training and experience nor the necessary appliances. Snapper's reaction,[1] however, is a superior method, the results of which are as reliable as those of the best chemical tests. The feces are placed in a mortar, and extracted with acetone. This withdraws much of the coloring matter and water, leaving a dry mass that is quite susceptible to spectroscopic analysis. The dry residue is transferred to a clean mortar and rubbed up thoroughly with a mixture of one part of glacial acetic acid and three parts of ether, preferably ethyl acetate. After filtration, a quarter-volume of pyridin is added, then a drop of ammonium sulphid solution. This is examined spectroscopically. If blood is present, a hemochromogen spectrum band will be found on the boundary between yellow and green. The Snapper method is rather too complicated for the ordinary practitioner, and for this reason a good chemical method is usually to be preferred.

The chemical tests for occult blood in the feces are, in general, named after the reagent used in making them; hence we have the guaiac, the aloin, the benzidin and other tests. The oldest of these tests is the guaiac, and among these Weber's test occupies the first place. It is done in the following manner: Ten grams of feces is stirred up thoroughly in a mortar with 5 c.c. of water and 5 c.c. of glacial acetic acid. The mixture is poured into a test tube, and 10 c.c. of ether is added. The tube is shaken up and down. Then 1 c.c. of the ether mixture is pipetted off and mixed with an equal quantity of a 2 per cent. solution of guaiac resin; another 1 c.c. of the specimen is mixed with 1 c.c. of a 0.2 per cent. solution of guaiac resin, and still another 1 c.c. with a 0.02 per cent. solution; all three mixtures are dissolved in equal parts of alcohol and oil of turpentine. The solution assumes a purple color if blood is present. The different concentrations of guaiac are necessary, since one cannot foresee how much blood the feces may contain. The great objection to the test is that less than 10 per cent. of blood in the feces will not give a positive reaction. The original Weber test is no longer considered practical.

Two important modifications of it have been made. First, the Boas chloral-alcohol-guaiac method: One gram of feces is mixed with 10 c.c. of a 70 per cent. solution of chloral hydrate in 96 per cent. alcohol and 1 c.c. of glacial acetic acid. The mixture is filtered. To 1 c.c. of the filtrate is added 1 c.c. of a 2 per cent. solution of guaiac resin in equal parts of the chloral hydrate solution and hydrogen dioxid 3 per cent. solution. A bluish color indicates a positive reaction.

Kuttner and Gutmann describe the second modification: Eight grams of feces is stirred up with acetone, the latter is poured off, and the residue is treated with 5 c.c. of glacial acetic acid and 10 c.c. of 7 per cent. sodium chlorid solution. This mixture is extracted with ether. The ether is poured off and a few drops of glacial acetic acid is added. This extract is then used as in the original guaiac test.

The aloin test is similar to Weber's, but a 2 per cent. alcoholic solution of aloin, to which turpentine has been added, takes the place of the guaiac solution. It gives a positive reaction with a minimum of 5 per cent. of blood in the feces, the specimen becoming red.

The pyramidon test is much used in France at present. A small portion of the feces to be tested is stirred up in from 3 to 4 c.c. of distilled water, and filtered. To the filtrate, 3 or 4 c.c. of a 90 per cent. alcoholic solution of pyramidon is added and also several drops of 30 per cent. acetic acid with hydrogen peroxid. A violet blue is proof of the presence of occult blood. Thevenon and Rolland, the first to recommend this test, believe that it is as delicate as the phenolphthalein test; but Koopman, who has thoroughly studied it, rejects it because he frequently obtained positive reactions in feces known to contain no pathologic blood.

Boas' phenolphthalein test is done in the following manner: One gram of feces is stirred up in a mortar with 5 or 6 drops of glacial acetic acid and 10 c.c. of alcohol. This is filtered, and the filtrate poured on a mixture of 15 drops of Boas' phenolphthalein reagent,[2] 5 drops of hydrogen peroxid solution (3 per cent.) and 2 c.c. of alcohol. A red coloring denotes a positive reaction.

Boas' thymophthalein test: One gram of feces is stirred up with 10 c.c. of alcohol and 10 drops of glacial acetic acid. To 30 drops of the filtrate of this mixture, 20 drops of Boas' thymolin reagent [3] is added, with 15

* Read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Snapper, I.: Arch. f. Verdauungskr., 1921, No. 3, p. 178.

2. One gram of phenolphthalein, 25 gm. of potassium hydrate, 100 c.c. of water and 10 gm. of zinc powder.

3. One gram of thymophthalein, 25 gm. of potassium hydroxid, 100 c.c. of water and 10 gm. of zinc powder.

drops of hydrogen peroxid solution (3 per cent.). If the reaction is positive, a blue color will appear.

The benzidin test, of which there are several modifications, seems to be the favorite chemical test. It is extremely important, however, that the reagent be absolutely pure, otherwise the results cannot be depended on. Moreover, benzidin in an ether solution should be avoided, because in such tests the ether combines with benzidin and hydrogen peroxid, resulting in blue combinations which are mistaken for blood.

Benzidin was first recommended by O. and R. Adler. The benzidin test is based on the principle that the easy oxydasis of the colorless benzidin, by means of the oxygen from the added hydrogen peroxid, results in a higher oxidized combination which is green or blue. Hydrogen peroxid will not allow its free oxygen to act except in the presence of blood-coloring pigment.

Among the benzidin tests, the Schlesinger-Holst modification does not always give a reliable reaction, since the boiling of the feces for the destruction of enzymes interferes to a considerable degree with the delicacy of the reaction.

The Wagner test is as follows: One gram of feces is smeared on a glass slide, and to this is added a few drops of the following mixture: a small particle of benzidin in 2 c.c. of glacial acetic acid and 20 drops of hydrogen peroxid (3 per cent. solution). This test is simple, but it is not always reliable, as it does not always yield a negative result in cases in which there is known to be no occult blood present.

In 1915, Dudley Roberts [4] of Brooklyn recommended a benzidin triturate tablet composed of one part of benzidin to 20 parts of sodium perborate triturated. The test consists in placing in a small dish enough of the specimen "to wet the tablet without immersing it completely," and adding a drop or two of glacial acetic acid, which will at once bring out a greenish blue if there is any blood present. In case the percentage of blood is small, only the edge of the tablet will be found to change color. This test has proved very satisfactory.

Emphasis has been placed repeatedly on the delicacy of the several benzidin tests. Yet there is such a thing as too great a delicacy, for blood in very small quantities is found physiologically, not necessarily pathologically, in the feces. Now the reagent for practical purposes must be such that it will reveal the latter, and not the former. In order to evaluate the reagent properly, Gregersen of Copenhagen made a great many experimental tests, and finally came to the conclusion that anything less than from $\frac{1}{30}$ to $\frac{1}{200}$ per cent. of blood in the feces could not be considered pathologic. He discovered that concentrated solutions of benzidin were altogether too delicate, and that a weak solution (1 or 0.5 per cent.) would yield better results. In Gregersen's long series of investigations, he added 1 gm. of blood daily to the meatless diet of persons who were otherwise giving a negative reaction.

In my personal observation, the Gregersen test gives the best results, and combines exactness, reliability and simplicity. Other tests call for an extract of the feces, while this test is applied to the feces directly.

Five years ago, Gregersen [5] made the very important observation that all benzidin tests depend on the concentration of the benzidin solution. To insure a definite percentage of benzidin in every test, he recommends a powder consisting of 0.025 gm. of benzidin and 0.20 gm. of barium peroxid, to be kept in wax papers. When the reagent is wanted, one powder is dissolved in 5 c.c. of a 50 per cent. solution of acetic acid; this gives a 0.5 per cent. benzidin solution. Boas now recommends the Gregersen modification, and, for convenience, has had Merck prepare a small tablet containing 0.025 gm. of benzidin and 0.10 gm. of barium peroxid, to be dissolved in 5 c.c. of 50 per cent. acetic acid solution. It is needless to say that here, as in all other tests, the instruments must be scrupulously clean, and should be used for no other reactions.

Not only must the patient partake of neither meat nor fish for three or four days prior to an occult blood test, but certain vegetables, such as French fried potatoes, are to be denied him at this time. Gregersen himself stoutly maintains that chlorophyl-containing vegetables themselves do not simulate positive reactions, but that any such positive reactions are due to utensils used in the preparation of the vegetables, while nearly all other authorities blame the vegetables themselves.

Gregersen has tried thoroughly the effect of his benzidin test on a variety of the commonest foodstuffs, such as bread, butter and cheese, without ever obtaining positive reactions. Adler,[6] in experimenting with 0.5 per cent. solution and also with concentrated solution of benzidin, found that, in most cases of meatless foods, such as barley, farina, rice, purée of peas, potatoes, carrots, beets, cabbage or asparagus, also white of egg, yolk, butter and substitutes, bread, sugar, etc., the results were negative. Even spinach, so often considered as simulating blood in the feces, in repeated tests gave negative results; only once did blood coloring result, and it was probably due to the meat extract used in preparing the spinach.

For the Gregersen modification of the benzidin test, one needs only a small quantity of the feces, which is smeared on a microscopic glass slide. This small particle may be procured from the central part of a fecal mass, thus avoiding any accidental admixture of blood from anus or genitals. Moreover, the necessary particle being so small, it may easily be transported and kept until a convenient time for making the test. As the feces are homogeneous in composition, any particle will be typical of the whole. If the particle has dried up, it should be dampened with a little water, and the benzidin reagent should then be added.

This benzidin reagent must be prepared fresh for every test, as the solution will not keep for more than half an hour, and it must also contain the definite required concentration. Powdered benzidin will keep indefinitely when mixed with barium peroxid as stated above. The reagent is easily prepared by placing the powder in a glass beaker into which 5 c.c. of a 50 per cent. solution of acetic acid has been poured. When the barium peroxid is dissolved in the acetic acid, hydrogen peroxid is liberated. The addition of a solution of hydrogen peroxid is now unnecessary. This is all the better, since hydrogen peroxid solution will not keep, and usually evaporates even when the bottle is corked, thus spoiling the preparation.

According to Gregersen's method, one needs only two reagents, a prepared powder mixture of benzidin and barium peroxid and a 50 per cent. solution of acetic acid. Both will keep separately indefinitely. The test solution is obtained by placing the benzidin-barium powder into the acetic acid. The feces are then spread on a glass slide, and from 2 to 4 drops of the benzidin-barium-peroxid-acetic acid reagent is dropped on them. If pathologic blood is present, there appears

4. Roberts, Dudley: A Benzidin Tablet Test for Occult Blood, J. A. M. A. **65**: 244 (July 17) 1915.

5. Gregersen, J. P.: Untersuchungen über okkulte Blut, Arch. f. Verdauungskr. **25**, No. 3, 1919.

6. Adler, E.: Arch. f. Verdauungskr. **27**: 153, 1921.

within one minute a greenish blue or a blue. The color is easily detected on placing the glass slide on a white background.

In order to make sure of the activity of the benzidin solution, Gregersen prepares a blood test paper. If, when a drop of the benzidin solution is placed on the paper, the latter turns deep blue, this is proof positive that the benzidin reagent is in proper condition.

The more blood there is in the feces, the more quickly will the color appear, and the darker will it be. Gregersen emphasizes that the time required for the color to appear is indicative of the quantity of blood in the feces, and he divides the positive reaction into three grades:

1. If it takes from fifteen to sixty seconds for mere greenish blue or pale blue to develop, this is called a weak positive reaction and is marked 1 +. The blood content in this case is less than 1 per cent.

2. If it takes from three to fifteen seconds and the coloring is deeper, the reaction is definitely positive and is marked 2 +. Here we have from 1 to 5 per cent. of blood.

3. When the change appears almost instantly and is deep blue, almost black, the reaction is strongly positive and is marked 3 +. More than 5 per cent. of blood is indicated.

The blood percentage is, of course, very important, and a series of benzidin tests will reveal whether the hemorrhages are increasing or decreasing. Thus the Gregersen benzidin test, when properly made, does away with the coarser tests, which give a positive reaction only when the blood percentage is large; and since it registers in three grades, as described above, it makes unnecessary subsequent and more delicate alcoholic tests. Boas [7] nevertheless suggests that when, in doubtful cases, the Gregersen test is found negative, we can control the reaction by means of the chloral-alcohol-guaiac test, as described in the first part of this paper; but I agree with him in saying that for all practical purposes the Gregersen test may be considered sufficiently reliable.

The Gregersen test is of greater practical value than any other test for occult blood in the feces. Its advantages are:

1. The proper 0.5 per cent. concentration of the benzidin reagent possesses the required delicacy and indicates the quantity of blood in the feces.

2. The test solution is easily prepared, the instruments used are the simplest, and the specimen of feces required is extremely small.

3. The test is simpler than any other, since it does not call for extraction of the feces.

4. Consecutive tests will prove whether the first positive reaction was due to the accidental presence of blood, or to pathologic conditions.

812 Kresge Building.

ABSTRACT OF DISCUSSION

DR. HENRY ALBERT, Reno, Nev.: What was the objection to potatoes, especially French fried potatoes?

DR. CHARLES D. AARON, Detroit: Some authorities say that it is not necessary to take any vegetables away from the patient. I do not agree with this, but there are many vegetables that should not be eaten. French fried potatoes, from the method of cooking, are particularly undesirable. It is thought that it is not the vegetables so much as the utensils in which they are cooked that is objectionable.

7. Boas, I.: Arch. f. Verdauungskr., 1921, No. 1, pp. 59 and 60.

CONGENITAL ARTERIOVENOUS FISTULA

AN EMBRYOLOGIC STUDY, WITH REPORT OF CASE *

WILLIAM FRANCIS RIENHOFF, JR., M.D.
Resident Surgeon, Johns Hopkins Hospital
BALTIMORE

In 1757, William Hunter [1] described, for the first time, the clinical syndrome of arteriovenous fistula, and stated that the disease always arose traumatically as a result of transfixion, by a cutting instrument, of an artery and a vein lying close together, the apertures of these vessels subsequently becoming fused, thus permitting a mutual flow of blood between them. Later, in 1835, W. H. Porter [2] and others described cases in which there had been established an arteriovenous fistula by erosion of the accompanying vein, due to a pathologic process involving the artery. The former was called an acquired arteriovenous fistula, and the latter a spontaneous arteriovenous fistula. It was not until 1867, however, that Hewitt [3] reported the first case of a probable congenital arteriovenous fistula existing between the right common iliac vessels, in a girl, aged 17 years.

The late Dr. Halsted,[6] in 1918, discussed arteriovenous fistula before the American Surgical Association, and presented a case of congenital arteriovenous fistula of the neck. He made a very careful analysis of all the reported cases in the literature up to that date, and these data were later published by Callander.[7] To quote Dr. Halsted directly, "congenital arteriovenous fistula without nevus is very rare and occurred only twice in 447 cases, while with nevus the condition was noted in six cases only." The two cases referred to by Dr. Halsted were those of Hewitt and von Eiselsberg, mentioned above.

In the Johns Hopkins Hospital, there have been the following two cases of congenital arteriovenous fistula, which have not before been reported:

CASE 5.—A youth, aged 18, about five years before admission noticed a puffing noise in the region of his right shoulder and neck. Examination revealed a large mass involving the right side of the neck and the supraclavicular region. Dilated vessels in and beneath the skin gave the appearance of earthworms. The larger veins pulsated markedly. Over this mass there was a continuous thrill and bruit.

Two operations were performed. Fistulous communications between the subclavian artery, the transversa colli artery and the overlying veins were ligated. Dilated veins were excised.

This case was undoubtedly a congenital arteriovenous fistula in which there were multiple fistulous communications, end-to-end, between the subclavian artery, the transversa colli artery and venous lakes.

* From the surgical clinic of Dr. J. M. T. Finney, Johns Hopkins Hospital.

* The original of this abstract will be published in the Johns Hopkins Hospital Bulletin, Sept. 19, 1924.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

*Owing to lack of space this article has been abbreviated for publication in THE JOURNAL by the omission of two illustrations and the reports of some of the early cases. These will be included in the author's reprints and in the Transactions of the Section.

1. Hunter, William: The History of an Aneurysm of the Aorta, with Some Remarks on Aneurysm in General, Medical Observations and Inquiries **1**: 323, 1757; Further Observations upon a Particular Species of Aneurysm, ibid. **2**: 390, 1762.

2. Porter, W. H.: Varicose Aneurysm, Cyclopedia of Anatomy and Physiology, London **1**: 242, 1835.

3. Hewitt, Prescott: A Case of Congenital Aneurysmal Varix, Lancet **1**: 146, 1867.

6. Halsted, W. S.: Congenital Arteriovenous and Lymphaticovenous Fistulae: Unique Clinical and Experimental Observations, Tr. Am. Surg. A., 1919.

7. Callander, C. L.: Study of Arteriovenous Fistula with an Analysis of 447 Cases, Johns Hopkins Hosp. Rep. **19**, 1920.

No cardiac changes were observed in this case, although the duration was at least five years and probably much longer. The fistulous communications were quite large, and the communications between the arterial and the venous systems did not seem to function in this case until the patient was about 13 years of age, when there was a sudden opening up of blood channels which had lain latent, remaining closed since birth, and which were formed undoubtedly by the persistence of vessels or communications of the primary vascular anlage in the embryo. From this time on, there was a constant and rapid growth of the tumor, as in Case 4 of Dr. Halsted, and it should be noted that in both cases there occurred the end-to-end type of anastomosis. In this type, the hydrodynamic factors, such as the direction of the blood flow and the intravascular pressures, are directly and primarily responsible for the enlargement, or apparent growth of the tumor, the distortion of the blood flow being mechanically responsible for the enlargement of the aneurysmal tumor rather than any inherent tendency to new growth occurring in the vessels themselves, as no evidence of any neoplastic changes could be observed in the microscopic sections studied from either cases 4, 5 and 6. The blood vessels making up the tumor were essentially normal in appearance and structure.

CASE 6.—The second case was that of a woman, aged 35, who, when 5 years old, had noticed that the right leg was larger and longer than the left. Examination showed that the right leg was 6.5 cm. longer than the left, and that the right femoral artery was three times larger than the left. There was a systolic thrill and a continuous bruit over the right femoral and iliac arteries, and a venous engorgement of the right leg from the knee to the dorsum of the foot. The popliteal artery on the right side was greatly dilated and tortuous.

Fig. 3.—Beginning of dissection of neck; skin flaps and parotid gland retracted.

Two operations were necessary. All the geniculate branches of the popliteal artery were ligated. The bruit was reduced by ligation of the anterior tibial artery. The popliteal artery was very thin and much dilated.

Two days after the operation, the bruit returned. Eighty-five hours after the operation, there was hemorrhage followed by gangrene, and the leg was amputated above the knee. Five branches of the anterior tibial artery ran into the tibia, into a sort of reservoir, which was drained in turn by five tributaries of the vein accompanying the artery.

The bony changes in this case prove, we believe, that the vascular condition existed while the bone was still growing, before the epiphyses had united, and therefore was probably congenital. The sinusoidal type of circulation approximates somewhat the type of embryonic circulation. It might well be called an intermediate encysted varicose aneurysm. Although of thirty-five years' duration, with large fistulous communications, there was nothing abnormal noted concerning the heart. The other characteristic vascular changes of arteriovenous fistula were, however, present. This patient was, of course, not cured.

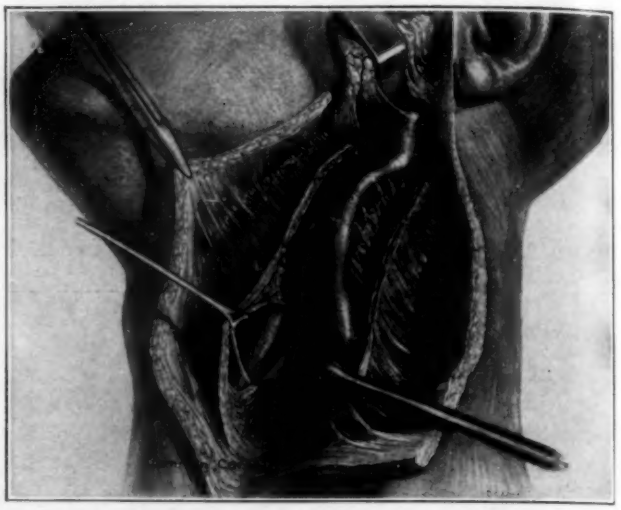


Fig. 4.—External jugular vein dissected beneath platysma; common carotid artery exposed.

Since 1920, I have made a careful search of the literature and find that the total number of reported cases of arteriovenous fistula is more than 500. Of this number, there have been twenty-two cases of congenital aneurysmal tumors, twenty reported cases and two cases in the Johns Hopkins Hospital which have not been reported. Of these twenty-two cases, those of von Eiselsberg, Halsted and the two from the Johns Hopkins Hospital are the only ones concerning which I think I have sufficient data to classify them definitely as cases of congenital arteriovenous fistula. The other sixteen cases reported, i. e., those of Busch,[8] Mussey,[9] Mott,[10] Norris,[11] J. C. Warren,[12] Cherry,[13] Pemberton,[14] J. M. Warren,[15] Lee,[16] Gross,[17] Deprès,[18] Eve,[19] Domainville,[20] Brandau[21] and Berry,[22] have appeared in the literature under various titles—aneurysm by anastomosis, cirsoid aneurysm, pulsating nevi, venous tumor and congenital arteriovenous fistula—showing clearly that there seemed to exist a great deal of confusion in the minds of the authors as to the exact nature or type of the disturbed vascular mechanism.

8. Busch, George: Lancet **2**: 413, 1827.
9. Mussey, R. D.: Am. J. M. Sc. **5**: 316, 1829.
10. Mott, V.: Am. J. M. Sc. **5**: 255, 1829; **7**: 271, 1830.
11. Norris, G. W.: Am. J. M. Sc. **5**: 17, 1843.
12. Warren, J. C.: Am. J. M. Sc. **11**: 286, 1846.
13. Cherry, E. D.: New Orleans M. & S. J. **16**: 672, 1859.
14. Pemberton: Lancet **1**: 516, 1860.
15. Warren, J. M.: Boston M. & S. J. **66**: 365, 1862.
16. Lee, Henry: Lancet **1**: 147, 1867.
17. Gross, S. W.: Proc. Path. Soc., Philadelphia **2**: 86, 1867.
18. Deprès: Tumeur veineuse du plancher de la bouche; anévrysme artérioveineux; ligature des deux artères linguales, Bull. et mém. Soc. de Chir. de Paris **5**: 794, 1879.
19. Eve, F. S.: A Case of So-Called Aneurysm by Anastomosis of the Ear, Tr. Path. Soc. London **31**: 88, 1880.
20. Domainville: Aneurysm by Anastomosis of Face and Orbit; Electrolysis; Ligature of the Common Carotid Artery, New York M. J. **38**: 637, 1883; M. News, Philadelphia **43**: 639, 1883.
21. Brandau, J. W.: Aneurysm by Anastomosis, Nashville J. M. & S. **72**: 195, 1892.
22. Berry, James: Large Arteriovenous Aneurysm of the Neck Treated by Excision, Lancet **2**: 1714, 1906; Tr. M. Soc. London **30**: 50, 1907.

Of particular interest were the cases of Busch, Case 7; Lee, Case 11, and Eve, Case 14. Owing to the fact that this paper is only an abstract of the original, I have been unable to discuss the remainder of the sixteen cases, all of which are notable for their extraordinary clinical pictures and manifold interests.

Case 7, reported by George Busch, was probably one of congenital tumor, made up chiefly of arterial vessels. No mention is made of proximal dilatation of the arteries or veins, or other evidence of an arteriovenous anastomosis. There was a pulsating tumor, the size of a pigeon's egg, on the right side of the temple, which had been present since birth. The entire aneurysm was excised, and a permanent cure resulted. The tumor was composed of many small anastomosing arteries.

The case of Frederick Eve, in 1880, was a so-called aneurysm by anastomosis on the ear in a woman, aged 21. The tumor had been early called a nevus, and had been present since birth. This grew very slowly but constantly, until it had involved the entire ear. The ear was removed, and the patient was cured. Microscopic sections of the tumor showed many arterioles of various sizes, giving off capillaries, which anastomosed and formed a close and more or less uniform network. Both the foregoing cases were undoubtedly congenital aneurysmal tumors that were arterial in origin, and not arteriovenous aneurysms.

Case 11, reported by Henry Lee, in 1867, was a case of so-called aneurysmal varix, with an enormous dilatation of the veins from the shoulder to the elbow in an adult. The axillary vein was greatly enlarged, as well as the superficial veins and the venae comites; the muscle substance was almost supplanted by a plexus of veins. The arteries were perfectly normal. There was no suggestion in any way of an arteriovenous fistula. The arteries were not enlarged, as they should have been had there been any arteriovenous anastomosis.

The patient died of typhus four years after the onset of the aneurysmal tumor. The tumor or venous aneurysm must have been congenital in origin, but had not made itself known to the patient until four years previous to his death.

These three cases demonstrate that a congenital aneurysmal tumor may be either arterial or venous in origin and, therefore, in its final composition.

REPORT OF AUTHOR'S CASE

In the hope that some light might be thrown on the etiology of this disturbed vascular mechanism, the anatomic condition to be expected and the physiologic changes involved, the following case is reported:

A. J., a man, aged 20, admitted to Johns Hopkins Hospital, Jan. 7, 1924, complained of a pulsating, rumbling mass in the left side of the neck. When he was 3 weeks old the parents noticed a pulsating tumor on the left side of the neck immediately below the lobe of the ear. He suffered from frequent attacks of epistaxis, shortness of breath, and slight attacks of dizziness, especially after severe excercise, excitement or pressure on the left side of the neck. The temperature was 98.2; the pulse, 80; respiration, 20. The blood pressure was 120 systolic and 76 diastolic in the right and the left arm. There was a very pronounced pulsating tumor on the left side of the neck, which was immediately below and to one side of the angle of the left jaw, causing the left ear to be displaced laterally with each pulsation of the tumor (Fig. 1). The displacement of the ear and the pulsation of the tumor were synchronous with the cardiac systole. There was a marked buzzing thrill or machinery hum felt over the entire left side of the neck and head, but with the maximal intensity over an area that was the seat of a forceful, vigorous, expansive pulsation. The common carotid artery on the left side could be palpated throughout its length, and seemed to be about three times as large as on the right. Occlusion of the left common carotid by digital pressure caused a cessation of the pulsation of the aneurysmal tumor and also of the thrill that accompanied it. The pulse dropped from 20 to 30 beats a minute, while there was a definite rise in the systolic blood pressure of 20 mm., and also a rise of 20 mm. in the diastolic pressure. On auscultation, there was a marked, loud rumbling to and fro, and a machinery-like murmur heard over the entire left side of the head and neck, with maximal intensity over the point of greatest pulsation of the tumor.

Examination of the heart revealed that the precordium was normal in appearance; there was no bulging or heaving; sounds were clear. A soft blowing, systolic murmur was best heard at the apex and over the left margin of the heart to the base; it was not transmitted to the axilla or back. The radial pulses were equal and regular in rate, volume and rhythm; there was no collapsing quality. The abdomen was normal. The liver and spleen were not felt. Examinations of the urine and the stools were negative. The Wassermann reaction was negative. Blood examination revealed: red blood cells, 5,000,000; white blood cells, 9,000; hemoglobin, 85 per cent. The differential formula was undisturbed. An electrocardiogram was normal (Fig. 2). A teleroentgenogram was normal.

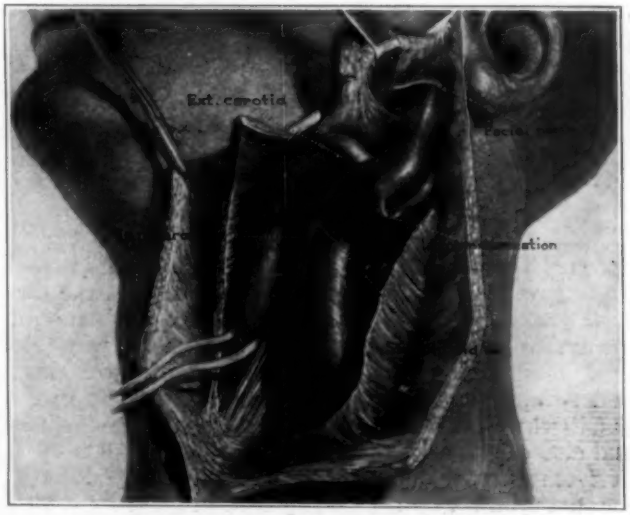


Fig. 5.—Common, external and internal arteries dissected free; first posterior fistulous communication exposed; internal carotid of small size.

Impression.—Congenital arteriovenous fistula between the external carotid artery and the external jugular vein.

I operated, Jan. 19, 1924. An enormously dilated, pulsating venous trunk, measuring about 4 cm. in diameter, which appeared to be the external jugular vein (Figs. 3 and 4), in which one could observe arterial and venous blood mixing together, was exposed. The common carotid artery was exposed and found to be greatly dilated (Fig. 5). The artery measured about 3 cm. in diameter. The internal carotid was very small, and the external carotid was very much dilated (Fig. 6). No internal jugular vein was made out (Figs. 6, 7 and 8). Eight fistulous communications were then dissected out between the external carotid artery and the anomalous external jugular vein.

The convalescence was uneventful. The thrill and bruit had entirely disappeared; the electrocardiogram and teleroentgenogram were unchanged. The blood pressure was definitely elevated for several days (between three and five), when the preoperative level was again reached by a gradual fall of the systolic and the diastolic pressures. The red blood cell count rose to 6,000,000 following the operation, but after two days a readjustment took place and the red blood cells fell to a normal level of 4,080,000, and the hemoglobin to 80 per cent.

May 1, the patient returned for observation. There was no bruit or thrill, and no roaring or rumbling in the head. The pulsations of the external carotid were definitely diminished. The electrocardiogram and teleroentgenogram were normal as before operation. The blood pressure was 120 systolic and 76 diastolic.

EXPERIMENTAL DATA

The multiplicity of the fistulous communications in this case, together with the presence of an anomalous

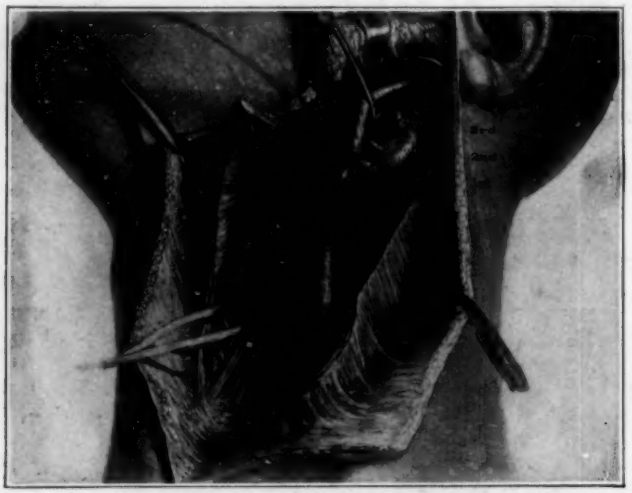


Fig. 6.—First, second and third fistulas exposed.

external jugular vein and a total absence of an internal jugular vein, at once suggested the idea that the disturbed vascular mechanism was due to the persistence of the embryonic type of circulation. A study was then made of specimens of pig embryos, from 6.5 to 20 mm. in length, which were injected with India ink in the umbilical vein and cleared with the Spalteholtz method, and also of the area vasculosa of living chick embryos, of from one to four days' incubation. This study of the embryonic circulation was made in the hope that some explanation might be found for the presence and the persistence of embryonic communications between an artery and a vein. The area vasculosa of the chick embryos was studied by means of cutting a window in the egg shell over the blastoderm and observing directly the circulation with the microscope, either over a short period of time (from two to six hours) or aseptically for a period of several days.

In 1922, I [23] found, in working on the development of the metanephros in tissue cultures, that the anlage of the blood vascular system differentiates out in situ for each separate region of the embryo, as a primary capillary network which is very rich in anastomoses and through which the flow of blood is very slow. The definitive vascular tree is then evolved from this primary capillary network by a gradual coalescence of some of the more fortuitously placed capillaries and an atrophy and disappearance of those less favorably situated. In the course of normal development, the paths taken by the blood stream are, with the exception of very minor and inconsequential variations, quite definite for each region of the embryo. The cardiac impulse, as well as certain other hydrodynamic factors, plays a very important part in the determination of the definite vascular bed, but the greatest factor is undoubtedly the inherent tendency of certain embryonic tissues to form certain definite structures. In the tissue cultures, referred to above, we found that the vascular tree would differentiate and further develop in the normal and characteristic manner, although totally removed from the influence of the circulating blood. However, as soon as the environment in which the vascular anlage was developing was caused in any way to become detrimental to this development, there would be observed unusual and bizarre formations composed of all stages from the perfectly normal formation of capillaries to flat sheets and masses of differentiated endothelium, so that we believe it can be definitely stated that there is in the life cycle of a cell, which is differentiating or growing, a period in which the cell is very sensitive to its environment, and any injury to it at this stage will result in the abnormal growth and development of that cell or structure.

Having observed the foregoing phenomena in tissue cultures, I attempted to reproduce them in the living chick embryo. For this purpose, the area vasculosa was chosen. The flow of blood through that area, at first, is entirely arterial, away from the heart to the peripheral or marginal vein or centrifugal. There is at first a very rich anastomosing capillary communication between the large arterial trunks, but these communications diminish in an orderly sequence centrifugally, as development proceeds. The arterial trunk was very well developed before any blood was seen to be flowing back, or centripetally, except through the marginal veins. After three days, there is a transformation, and part of the capillary network assumes a venous character with a centripetal flow of blood, especially posterior and lateral to the embryo, by the formation of new connections between the original capillary network and the venous trunks; i. e., the anterior and posterior vitelline veins.

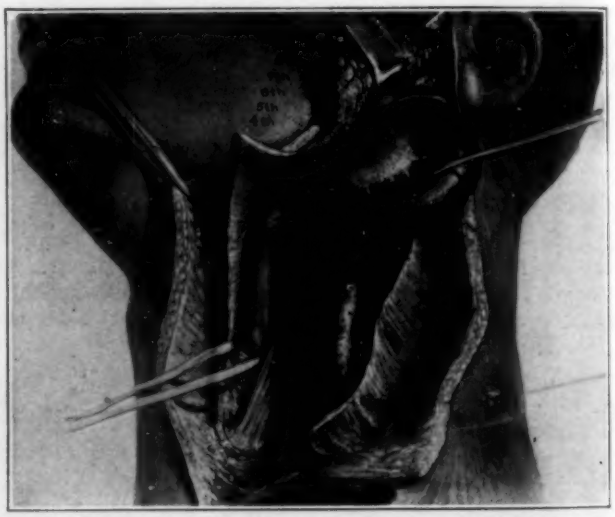


Fig. 7.—Anterior fistulas plainly shown, also facial nerve.

Thus the flow of blood is merely reversed and the capillary network, which previously served as an arterial channel, now serves as a venous channel. The development of the venous system is, from this point on, exactly similar to that described for the arterial system.

A great number of capillary communications persist between the arterial and the venous trunks, such as the omphalomesenteric artery and vein, for a number of hours after the larger vessels are fairly well formed. These communications eventually artophy in the normal

23. Rienhoff, W. F.: Development and Growth of the Metanephros or Permanent Kidney in Chick Embryos, Bull. Johns Hopkins Hosp. 33: 392 (Nov.) 1922.

course of development. Many attempts were made to cause a persistence of one or more of these capillary embryonic communications, because we felt sure that an arteriovenous fistula would result. Different methods of irritation were tried, but all were unsuccessful, except in one specimen which was being used for another experiment at that time and which was examined only as a matter of routine.

In this specimen, it was noted after the injection of three drops of typhoid filtrate into the marginal vein, that one of these capillary communications that had not yet atrophied, between the omphalomesenteric artery and vein, became much larger and took over a greater part of the blood flowing in that particular artery. The artery proximal to the fistula became enlarged and distally became smaller. The venous trunk became enlarged both proximally and distally.

Fig. 8.—Lateral suture of arterial wall and ligation of the remaining fistula.

Whether or not this experiment can be repeated remains to be seen, and whether or not the production of the arteriovenous fistula was merely a coincidence, we do not know; but in view of the fact that other malformations and abnormal conditions could be produced in tissue cultures by irritation, it would seem to be well within the realm of possibility that an abnormal development in the living could be produced by irritation.

Disregarding the cause, it can be said with certainty that in the foregoing experiment there was produced an arteriovenous fistula due to the persistence of embryonic communications between an arterial and a venous trunk. Two other interesting facts were brought out in the study of the reaction of arteries to trauma. If the branches of an artery have been torn and have become plugged, the diameter of the parent trunk decreases in direct proportion to the number of branches obliterated. Also the reverse could be said: The diameter of an artery increases as the sum total of the diameters of its branches increases. This is the observation that I made in the experimental production of an arteriovenous fistula. In my reported case, I observed dilatation of the artery up to the most distant fistula. Also, following injury, the arterial stream would establish itself much more rapidly than the venous flow, and a noticeable engorgement of the veins and swelling of the area drained by that venous trunk would be observed to occur in the interval between the establishment of a full arterial supply and good venous drainage.

A study of the injected pig embryos revealed many communications between the internal carotid arteries and the anterior cardinal veins. Throughout the embryo, there were numerous anastomosing channels between the arterial and the venous trunks. It is quite impossible to photograph successfully these specimens, but the drawings here shown of the development of the subclavian artery and vein portray (Fig. 11) very well the exact conditions that exist or occur during the development of the vascular system elsewhere in the embryo. Here are plainly shown many communications between the subclavian artery and vein, which gradually disappear as the main arterial and venous trunks define themselves. It is quite probable that there might very well be one or many channels of communication persisting between these vessels. Also, I believe that, in the event of a persistence of these fistulous communications, as in the case reported here, it would be more than likely that the communications would be multiple, rather than that only one single communication would persist. The study of the embryonic circulation was made in the hope that some explanation might be found for the presence and peristence of embryonic communications between an artery and a vein. The observations reported here seem to prove definitely that there are many capillary communications between developing arteries and veins in the embryo which offer ample opportunity for the development of arteriovenous fistulas; also, that the persistence of these channels of communication was observed in one experiment.

SUMMARY AND COMMENT

Congenital arteriovenous fistula is a very rare condition but a definite clinical syndrome, which has been confused in the past with other congenital anomalies of the blood vascular system, such as aneurysm by anastomosis, cirsoid aneurysm, nevus maternus, pulsating nevus and venous aneurysm. It would seem that there are two outstanding general types of congenital arteriovenous fistula, depending entirely on the anatomic structure of the anastomosing vessels. One type is that exemplified by the case reported here, in which there is a lateral anastomosis formed by small vessels communicating between an artery and an accompanying vein, without interrupting the continuity of either of the main vessels. In the other type there is more of a direct, or end-to-end, anastomosis between one or more arteries and a plexus of large venous sinuses in which the continuity of one or both vessels is interrupted in the formation of the anastomosis. This type of arteriovenous fistula is shown by Cases 4 and 5. Of course, there will always occur cases intermediate between these two distinct types, as Cases 3 and 6 demonstrate,

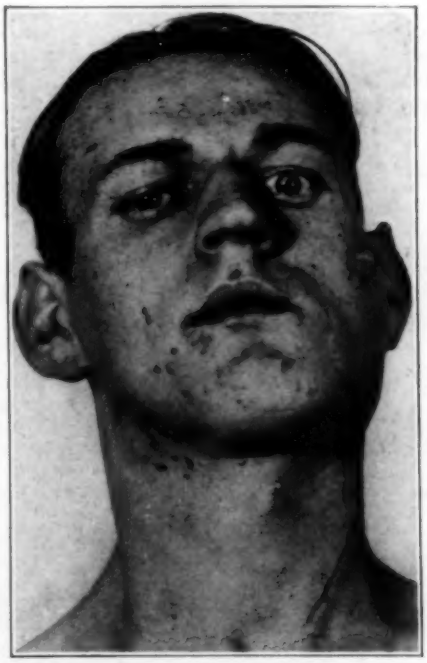


Fig. 9.—Induration of left parotid gland and paralysis of the left side of the face one week after operation.

and no sharp classification will suffice to include the numerous anomalous conditions that it would be possible to have formed in the development of the blood vascular system.

Nevertheless, it would seem that these cases represent two distinct types, and that other cases of congenital arteriovenous fistula will approximate one or the other.

There are certain effects, both local and general, which an arteriovenous fistula has on the circulation. My case and Cases 1, 3, 4, 5 and 6 show that in every respect except one there were manifested exactly the same clinical and pathologic-physiologic findings in the congenital as in the acquired arteriovenous fistula.

It will be noted in the foregoing six cases that: (1) there was enormous dilatation of the artery proximal,

Fig. 10.—Slight keloid formation in scar three and one-half months after operation; facial paralysis has disappeared and acne is much improved.

and reduction in its size distal to the fistula; (2) there was marked proximal and distal dilatation of the veins; (3) the fistulas varied in size from 0.25 to 3 cm. in diameter; in all except Case 3 they were multiple, and were situated at various distances from the heart; (4) the blood pressure changes were quite pronounced when the fistulas were closed, the systolic and diastolic moving up at least 20 or 30 mm., and the pulse dropping from 20 to 30 beats a minute; (5) there was a definite hyperpnea when at rest; (6) there were infiltration and edema of the parts distal to the fistulas, together with increased growth of the epiphysis last to unite. In none of the cases, however, was there the slightest evidence of an enlargement of the heart.

In going over a number of cases of other pathologic and anomalous conditions of the blood vascular system, I have found that any leak of arterial blood from the stream bed, no matter what its cause, is productive of a systolic murmur heard best over the precordium and at the base of the heart, but not transmitted.

The fact that the cases are congenital should not preclude the possibility of the necessity or ability of compensation on the part of the heart, for if the necessity was present, the heart would respond as in the cases of congenital coarctation of the aorta, a condition in which there occurs enormous hypertrophy and dilatation of the heart.

In consideration of the mode of development of the blood vascular system, and in view of the fact that in one experiment an arteriovenous fistula was observed in formation, I feel that congenital arteriovenous fistula occurs as a result of a persistence of vessels or communications of the primary vascular anlage, which, failing to develop into the normal definitive vascular tree, results in the formation of anastomotic channels either directly or indirectly between otherwise normally developed arterial and venous trunks.

In the foregoing series of cases and experiments, a number of types of congenital aneurysmal tumor have been demonstrated, and I feel that these cases and experiments prove beyond question that a congenital blood vessel tumor may take its origin in embryonic life from the developing blood vascular tree. The type of aneurysmal tumor which shall develop depends entirely on the vessels composing it. It may be an arterial tumor, as shown in Cases 7 and 14; it may be purely venous, as evidenced by Case 11, or it may be an arteriovenous tumor, a combination of both arterial and venous constituents with anastomoses between them. They are all the result of the persistence of some part of the primary embryonic vascular anlage which has come down into adult life, and they are not at all of the nature of a neoplasm. These abnormal channels may lay latent for a number of years before opening up, and when they do become patent the type and number of anastomoses present directly determine the future course of the aneurysmal tumor. The foregoing cases demonstrate that, in an arteriovenous fistula, if the arteries run directly into the veins the enlargement of the tumor is much more rapid than when the artery and vein are connected only by small communications. The hydrodynamic factors, such as the amount, rapidity and direction of the flow of the blood, together with the intravascular tension, are wholly responsible for the increase in size of the vessels and thus of the tumor. In the cases in which it was possible to study microscopic sections, there was not the slightest suggestion of a new growth of blood vessels in the sense of a neoplasm.

The close association of hemangiomas with congenital arteriovenous fistulas is shown by Cases 12 and 8, and I feel that the etiology of the two conditions is the same; i. e., a persistence of the embryonic type of vascular channels. A great part of the confusion of the early authors probably arose in their inability to distinguish between arteries and veins in these arteriovenous tumors, as the veins are thicker than normal and carry arterial blood. I feel, then, an effort should be made to classify these congenital aneurysmal tumors more accurately, and this can easily be done if they are properly studied.

The terms now in vogue are misleading and unintelligently used. If the congenital aneurysmal tumors are classified in regard to their etiology and the type of vessels composing them under three main headings,

such as (1) congenital venous aneurysm, (2) congenital arterial aneurysm and (3) congenital arteriovenous aneursym, a very simple and easily understood nomenclature will be instituted. Any of these three can be modified under subheadings to suit any given case. The capillary tumors could be left under hemangiomas, cavernous and teleangiectatic, as they are at present classified by our most modern pathologists. Nevi have been defined by MacCallum and others as tumors of epithelial origin containing pigmented cells called nevus cells. These may at times be somewhat vascular, but never to the extent of an aneurysmal tumor, so that it is incorrect to speak of a pulsating nevus, or refer to a hemangiomatous tumor as a nevus. Aneurysm by anastomoses and cirsoid aneurysm have been so loosely used that any number of different blood vessel tumors have been described under these headings, so that their meaning today has very little significance, and they are not satisfactorily defined in any textbook on medicine, surgery or pathology. I make this plea for the adoption of a simple definite nomenclature in order to stimulate a more careful study of these aneurysmal tumors, and also to aid in clarifying the future literature.

CONCLUSIONS

1. Congenital aneurysmal tumors may arise from either the arterial or the venous plexus of the primary vascular anlage, or there may be a combination of both arterial and venous, resulting in (1) congenital venous aneurysm, (2) congenital arterial aneurysm and (3) congenital arteriovenous aneurysm.

2. Congenital arteriovenous fistula is a definite clinical syndrome consisting of two types; in one of these, the continuity of the main vessels involved is not interrupted in the formation of the anastomosis; in the other, there is an interruption of the continuity of the main vessels forming the anastomosis.

3. All congenital blood vessels are due to a persistence of embryonic vascular channels, and are in no sense of the nature of a neoplasm.

4. The close association of hemangiomas and congenital arteriovenous fistulas is striking, and very suggestive that the etiology of them is the same.

5. The majority of cases of congenital arteriovenous fistula will be found to have multiple fistulous communications. These may lay latent for years before opening and becoming patent.

6. The local and general effects on the blood vascular system in congenital and acquired arteriovenous fistulas are similar in all respects, with the exception that there is no evidence of cardiac enlargement in the congenital cases.

7. A systolic murmur heard over the precordium occurs in any condition in which there is a leak of blood from the arterial system, and is not an indication of cardiac dilatation or myocardial insufficiency.

8. The injected pig embryos prove that the development of the blood vascular system is from a uniform capillary network or anlage rich in anastomoses, offering ample opportunity for the formation of an arteriovenous fistula.

9. The persistence of one of these communications between well developed arterial and venous trunks was caused by irritation, forming a true arteriovenous fistula.

10. Irritation of these endothelial elements, in vivo or in vitro, causes an abnormal development and growth.

11. In the area vasculosa, capillaries, at first carrying arterial blood, become carriers of venous blood, showing that a capillary can function normally regardless of the direction of the flow of blood.

12. The diameter of an artery decreases in direct proportion to the number of its branches that have been obliterated and, vice versa, increases in direct proportion to the total diameter of its branches, dilatation or diminution of the parent trunk occurring only up to the most peripheral branch affected, or, in the case of a false opening, to the most distant opening or fistula.

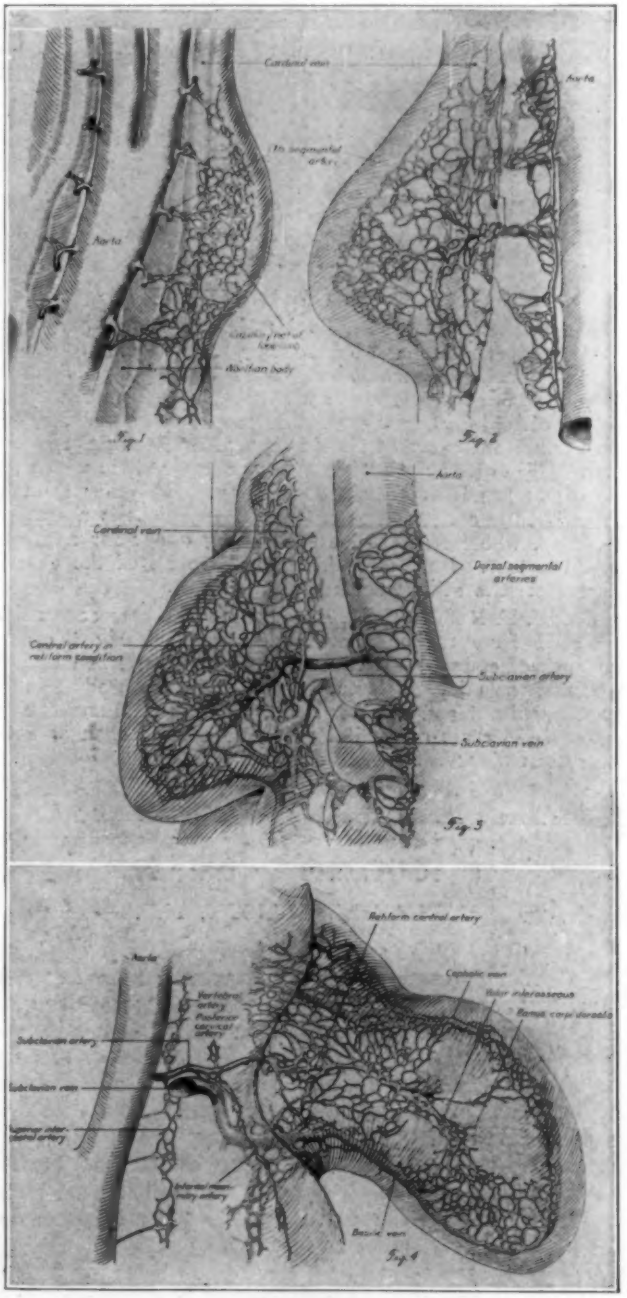


Fig. 11.—Development of subclavian artery and vein in pig embryo, 6.5 mm.; 1, seventh segmental artery with capillary network; 2 and 3, coalescence of capillaries resulting in formation of subclavian artery and vein; persisting communications in 3 between artery and vein, also shown in 4. The typical development of an artery and vein from the primary capillary network to the well formed trunk is well shown from 1 to 4.

13. Complete interruption of the arterial and venous circulation results in a reestablishment of the arterial channels and flow before that of the venous.

14. I desire to suggest for the first time, I believe that a simple nomenclature, as given under Conclusion 1, should be used, discarding the confusing and inaccurate terms, such as aneurysm by anastomosis, cirsoid aneurysm, venous tumor and pulsating nevus.

15. I feel that complete excision of the aneurysmal tumor is absolutely necessary to effect a complete cure.

16. The case herein reported is the first case in the literature of congenital arteriovenous fistula in which the patient was successfully operated on and cured by operation; the only case in which multiple fistulous communications were ever demonstrated by actually dissecting them out and exposing them at operation, and the only case in which there has been demonstrated lateral communication between an artery and a vein.

ABSTRACT OF DISCUSSION

DR. BARNEY BROOKS, St. Louis: Dr. Rienhoff's paper has called attention to the embryology of congenital arteriovenous fistula. The only congenital abnormal communications between arteries and veins that I have seen have been of the cirsoid aneurysm type. I have at present under observation two instances of cirsoid aneurysm of the palm of the hand. One of the patients is a woman, aged 20, in whom the condition has been present since birth. The other instance is doubtfully congenital in nature. The patient is a woman, aged 60, who has noticed the pulsating tumor for a period of five years. Both these instances have all of the clinical characteristics of arteriovenous fistula.

DR. W. F. RIENHOFF, JR., Baltimore: The case concerning which I have spoken demonstrates very clearly the persistance of embryologic channels into adult life, and readily explains the etiologic factor concerned in the production of all congenital blood vascular lesions or congenital aneurysmal tumors. In these congenital cases, no cardiac changes have ever been observed.

TUBERCULOSIS OF THE KNEE

THE IMPORTANCE OF DIAGNOSIS *

NATHANIEL ALLISON, M.D.
BOSTON

In order to carry out any therapeutic measure with hope of success, it is essential that the exact nature of a disease process be established. In order to estimate the results of treatment of any disease process, the presence or absence of that disease process must be proved beyond question of doubt.

Much clinical confusion arises from lack of sufficient evidence on which to base a positive diagnosis. Tuberculosis of the knee joint is a diagnosis difficult to establish, especially in the early stages of the progress of the disease.

It is my purpose in this paper to point out the nature of the evidence commonly relied on in making a diagnosis of tuberculosis of the knee joint. It is also its purpose to indicate the value of establishing a positive diagnosis in tuberculosis of the knee at as early a time as is possible in the progress of the disease.

The diagnostic methods commonly in use may be divided into several groups: physical examination, history, etc.; roentgen-ray photographic evidence; physiologic tests, blood examinations, reactions, etc.; animal inoculation, and microscopic tissue examination.

It is doubtless true that, in the early stages of a tuberculous lesion of a bone or joint, diagnosis is difficult. It is doubtless true also that this difficulty is encountered in early tuberculous disease of the knee joint.

PHYSICAL EXAMINATION

Robert Jones [1] places confidence in the record of the temperature chart. He believes that subnormal morning temperature, with an evening rise to 99 F. is a positive sign of importance; a higher temperature suggests other infection. He is inclined to rely on the temperature as good evidence in cases with vague history and insidious onset; if the evening temperature is not elevated, the evidence is of some other condition, such as trauma. All other clinical signs may be identical in any one or several disease processes.

Fig. 1.—Normal synovial membrane removed at necropsy from normal knee joint shortly after death. This section of the synovial membrane was taken from the lateral surface of the femur, well toward the base of the lateral pouch of the knee joint. It shows the endothelial-like structure of the synovial membrane, its vascularity and its irregular surface. The synovial secretion which lubricates the knee joint is secreted from this surface from the endothelial-like pockets or crypts, which are sometimes called "synovial glands."

König [2] believes that the clinical symptoms are often insufficient, and that various forms of arthritis may present identical early stage signs. He has seen many joints presenting all the clinical signs of tuberculosis rapidly improve and completely recover after the removal of other sources of infection. "Tuberculous knee joints," says Konig, "do not completely recover under any form of treatment. The disease process may be arrested, but permanent changes remain in the diseased knee."

Without further review of an extensive literature of observations on the value and interpretation of clinical signs, such as pain, swelling, limping, deformity, temperature, measurements, ranges of movement limitation, muscle spasm, general appearance, family history, exposure to tuberculosis, and milk supply, let it be assumed that this evidence, though highly valuable, is circumstantial in its nature. But let us also acknowl-

* From the Massachusetts General Hospital.

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Jones, Robert: Practitioner, January, 1913.
2. König, F.: Med. Klin. No. 24, 1913.

edge that its confirmatory evidence is of great value in arriving at a final positive diagnosis.

ROENTGEN-RAY EVIDENCE

In the early period of roentgen-ray photography, much faith was placed on the interpretation of the shadows thrown by the bones on the sensitive plate in establishing a positive diagnosis of tuberculosis of the knee joint. Here again is an extensive literature which, reduced to lowest terms, may be said to depend on the following points, thus summarized recently by Walkey:[3]

An x-ray diagnosis depends on:
1. A uniform thinning of the cortex of the bone.
2. A condensation and broadening of the capsule.
3. Destruction of cartilage or thinning of cartilage.
4. Lack of new bone formation.
5. The presence of bone focus, usually in the epiphysis.
6. Failure of extension of the disease process in the bone along the shaft, but rather a tendency to involve the joint.

These facts observed in a roentgenogram may lead to a strong belief that the disease process is tuberculosis of the knee. The evidence they supply, however, is only of a circumstantial nature. As confirmation of a positive diagnosis, these findings are, however, of great value in establishing the extent of the disease process.

It may be assumed that they are only of circumstantial value because it has been shown by several observers that tuberculosis of the bone may be accompanied by active new bone formation; the pathologic studies of Lovett and Wolbach,[4] Cofield,[5] and Brooks and myself [6] on this point are convincing. Again, either syphilis or

Fig. 2.—Chronic villus arthritis. Microscopic section of synovial membrane removed at synovectomy shows perivascular cellular infiltration with many mononuclear wandering cells, characteristic of a chronic inflammatory process.

gonorrhea may produce identical pictures of capsule and cartilage changes. Further, a local bone focus is really a cause for strong suspicion of tuberculosis, but it may be due to other infection, and it is not commonly seen in tuberculosis. Again, tuberculosis may involve large areas of the diaphysis of the bone.

Frequently, in the presence of an active tuberculous process in the knee, the roentgenogram reveals nothing. The cortex of all nonused bones becomes thinned.[7]

Fig. 3.—Section of synovial membrane removed for purpose of diagnosis. Clinical examination showed a painful, swollen knee, which had been causing symptoms for a period of six weeks. Roentgen-ray examination revealed nothing characteristic. Microscopic examination showed an abundant wandering cell infiltration of the synovial membrane made up largely of mononuclear cells. There are occasional focal collections of epithelioid and giant cells. The histologic appearance is definitely that of tuberculosis.

PHYSIOLOGIC TESTS FOR TUBERCULOSIS

On the value of the complement fixation tests, blood examinations and tuberculin tests, much has been written. A persistent effort has been made to determine specific tuberculous antibodies in the blood by a serologic test similar to the Wassermann test in syphilis. The method is hopeful but, as yet, there is uncertainty as to technical methods and the reliability of the antigens employed. The serologic test may never be of much value in early tuberculosis, because the antibody is not in the blood early in the disease.

It is believed by laboratory workers in this field that the serologic test, when positive, should be given more weight than when negative, and that it is of more value in prognosis and in differential diagnosis than in early diagnosis. Blood examination is of little value in making an early diagnosis of tuberculosis of the knee, and Wright's opsonic index theory has been discarded.

Among the tuberculin tests, Pirquet's test remains the best for general application. The Moro test is less accurate, and the hypodermic test is dangerous. The intradermal test is a modification of the Pirquet test, and is, perhaps, a shade more accurate. In a general way, we may assume that the results of all these methods should not be taken as positive evidence. When the test responds negatively, we are inclined to doubt the accuracy of our methods. When it responds positively, we have Pirquet's figures of 93 per cent. positive tests in children of about the same age, and the average

3. Walkey, A. E.: Canad. M. A. J. **12**: 728 (Oct.) 1922.
4. Lovett, R. W., and Wolbach, S. B.: Surg., Gynec. & Obst. **31**: 111 (Aug.) 1920.
5. Cofield, R. B.: Bony Bridging in Tuberculosis of Spine, J. A. M. A. **79**: 1391 (Oct. 21) 1922.
6. Allison, Nathaniel; and Brooks, Barney: Bone Atrophy, Arch. Surg. **5**: 499 (Nov.) 1922.
7. Allison, Nathaniel; and Brooks, Barney: Bone Atrophy, Surg., Gynec. & Obst. **33**: 250 (Sept.) 1921.

percentage of fourteen observers who studied large series of tests as 75 per cent. positive.

It may be assumed that the evidence of physiologic tests is more of value when negative tests are reported than when positive tests are reported, but it is to be realized that the entire evidence is not conclusive. As some observer has remarked, "The time has not yet

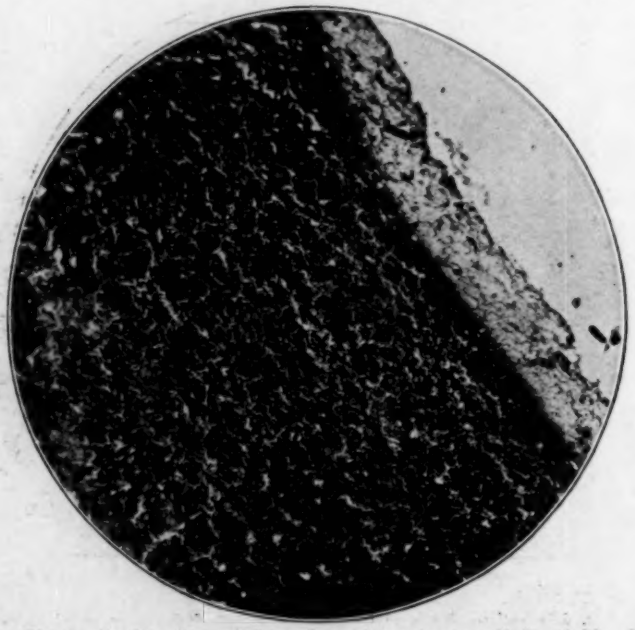


Fig. 4.—Section of synovial membrane in acute gonorrheal arthritis of knee. An acute inflammatory process in the synovial membrane composed of intense wandering cell infiltration and hemorrhagic exudate.

arrived when a diagnosis of tuberculosis can rest upon an easy answer to a scratch mark upon a patient's arm."

ANIMAL INOCULATION

Tissue removed from a suspected knee joint and placed in a guinea-pig, provided an accurate and painstaking technic is followed, gives us an accurate method of diagnosis. Its faults lie wholly on the technical side; the guinea-pig must be properly cared for during the long period necessary for it to develop the disease, and the guinea-pig must be carefully studied at necropsy. This test should go hand in hand with the other accurate method of diagnosis—the examination of tissue in section with the microscope.

TISSUE EXAMINATION

A properly stained section of suspected tissue will reveal the diagnosis in 90 per cent. of the cases. Here also the tissue must come from a diseased area, and the technic of cutting and staining the section must be correctly performed. Provided the tissue removed shows typical areas of tuberculosis, then the diagnosis is secured. Provided the inoculated guinea-pig shows at necropsy tuberculosis of its organs, then the diagnosis also is secured.

These two positive tests, when jointly positive, leave no doubt as to the nature of the disease process in the knee joint. By either, however, it is possible to declare a positive diagnosis of tuberculosis.

A doubt may occasionally arise in the tissue study. The microscopic picture of tuberculosis may be closely simulated by syphilis. As a rule, there is little difficulty in making a decision, but with a positive animal inoculation of tuberculosis, this doubt is removed. Wassermann's test should be done as routine in all cases of suspected knee joint tuberculosis, to aid in clearing up possible confusion between tuberculosis and syphilis.

Gonorrheal infection presents little differential diagnostic difficulty. The circumstantial evidence is convincing and the direct evidence, that is, microscopic study of the tissue removed, shows a strikingly different picture.

It is well known that our diagnostic methods may lead us far astray unless we have the courage to establish a positive diagnosis. Many mistakes may follow the assumption that a purely clinical diagnosis of tuberculosis of the knee is possible early in the disease. It is generally admitted that the tuberculous knee gets well by becoming ankylosed. Early ankylosis is the objective of surgical treatment.

It seems unwarranted in the light of this knowledge to temporize with tuberculosis of the knee joint. The studies of end-results of many large clinics show that the result of so-called conservative treatment of tuberculosis of the knee is unsatisfactory in a high percentage of cases.

Early diagnosis and early surgical treatment offer the best chance of cure.

SUMMARY

In suspected cases of tuberculosis of the knee, that is, those in which the circumstantial evidence points definitely to tuberculosis as the disease process, operation should be performed for the purpose of establishing a positive diagnosis. Tissue should be examined and animal inoculation done. This course is justifiable because the disease process, where it exists, will more or less completely destroy the knee, and will act as a menace to the life and limb of the person diseased.

A Wassermann test should be a routine procedure in the study of the etiology of knee joint disease.

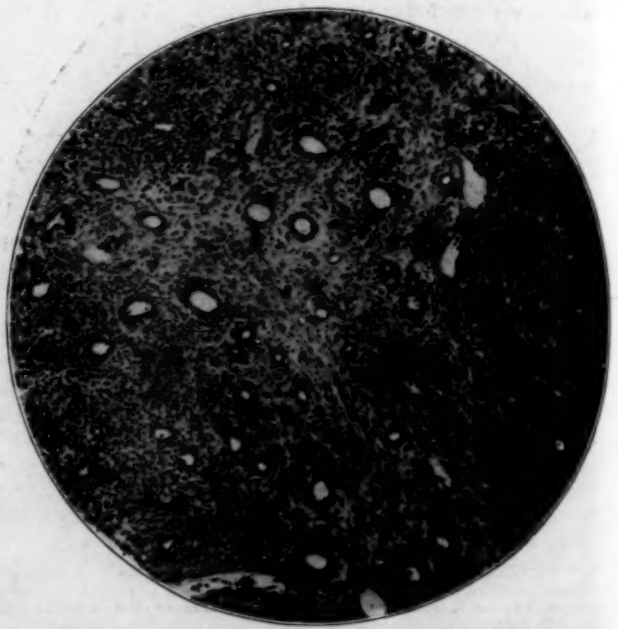


Fig. 5.—Section of synovial membrane in syphilitic arthritis of knee joint. The synovia is edematous and dark red. The process is very vascular, and there is an intense wandering cell infiltration in which plasma cells predominate. There are numerous large mononuclear cells and occasional giant cells, but no focal collections. The endothelial cells of the small vessels show proliferation.

In case the tissue examination by the microscope shows no evidence of tuberculosis, or in case the guinea-pig inoculation shows, after a proper period of time, no evidence of tuberculosis, then it may be safely

assumed that the knee joint in question is free of tuberculosis. It is perhaps more frequent than is generally realized, for a person to have syphilis as well as knee joint tuberculosis. It is essential for those who attempt to estimate the value of therapeutic measures, such as heliotherapy, to establish a positive diagnosis of bone or joint tuberculosis in all cases included in their statistics.

ABSTRACT OF DISCUSSION

DR. E. W. RYERSON, Chicago: It is really appalling to think what the results would be of a careful observation along these lines in the cases which so many of us for so many years have treated as chronic synovitis, as syphilitic arthritis, and what not, perfectly unscientifically, and yet avoiding the risk of an exploratory incision. This risk is becoming more negligible year after year. I can think of dozens of people with creaking knees, dear old ladies, complaining of pain and swelling, from whom I should hesitate to remove a piece of synovia. It should doubtless be done. Some of them are unquestionably tuberculous; and yet, if I found that some of them were tuberculous, I do not think I should care to propose an arthrodesis of the knee joint. on the other hand, I think that every middle aged adult who can be proved to have a tuberculosis of the knee joint should have an arthrodesis of the knee joint performed at the earliest possible opportunity. I believe this is a self-evident fact from the observations which I have made, and which many others have made, that tuberculosis in the knee joint in the adult does not get well without operation. The method of Dr. Allison is scientific and worthy of commendation. I wish we could extend it to a great many other conditions about which we have very little information.

DR. MELVIN S. HENDERSON, Rochester, Minn.: I think that this paper by Dr. Allison is very important. The question of diagnosis is the crux of the whole situation. I do not believe that Dr. Allison infers that everybody will have to depend on a microscope diagnosis absolutely. There are some cases which are perfectly frank, in which the roentgen-ray and physical findings show it can be nothing but tuberculosis. Chronic persistent disability extending over many years, with destruction of joint surfaces and typical clinical appearances of a tuberculous knee, gives such a clear picture, that I believe the diagnosis could be made clinically in nearly 100 per cent. in that group. But there are cases in which the method suggested by Dr. Allison of examining tissue removed and guinea-pig tests will have to be done to establish the diagnosis. I can recall two cases of tuberculosis in the joint in adults which were proved by the guinea-pig inoculation test, in which no destruction of bony parts was present, which after six and eight years respectively have been absolutely free from all symptoms following injection of iodoform emulsion done at the time of aspiration for diagnosis. Therefore we should not care to say that every case has to have a resection. Perhaps we will say we should wait until synovial membrane is extensively involved or extensive bony destruction is present. Resection in young patients gives excellent results. It has been my experience that amputation in elderly patients is to be preferred to resection, and I should like to have Dr. Allison's opinion on that point.

DR. NATHANIEL ALLISON, Boston: I am trying to avoid a clinical discussion, but I believe that Dr. Ryerson is quite right in what he has said. When a diagnosis of tuberculosis is positive, it is better to remove the cartilage from the knee, because only by removal of the cartilage does the knee heal. This can be easily proved pathologically in the study of any series of cases. The persistence of the disease is a menace more serious than the destruction of the knee. I do not agree with Dr. Henderson that it is well to wait too long, depending on "squirting" things into the knee in the hope of curing tuberculosis, because I do not believe that tuberculosis is cured by such methods. The patients he refers to probably recovered from their tuberculosis because of improved hygenic conditions and a better resistance to the invasion of the disease.

ABDOMINAL BINDER AS A SUBSTITUTE FOR PITUITARY EXTRACT IN SECOND STAGE OF LABOR*

ALFRED C. BECK, M.D.
BROOKLYN

Injections of pituitary extract increase the frequency and intensity of the uterine contractions. Pituitary extract, accordingly, is extensively used as an aid in the second stage of labor. Unfortunately, it acts differently in different women, and its occasional harmful effects cannot easily be remedied once they occur. The average dose, which in most women accelerates the birth of the child without risk, occasionally in others causes such violent contractions that rupture of the uterus may occur, especially if dystocia is present. Many instances of this unfortunate accident are recorded in the literature and have led to repeated warnings against the use of pituitary extract before the head has reached the pelvic floor. Even under such circumstances, the same violent contractions may cause extensive lacerations of the maternal soft parts and intracranial hemorrhage in the child. Because of these dangers, some obstetricians have advised that this uncertain drug never should be given to primiparas in the second stage of labor. Even in multiparas, its use is not always safe. Occasionally, after a small dose, the uterus goes into tetanic contractions and interferes with the uteroplacental circulation sufficiently to cause the death of the child. We have observed the fetal heart drop from 140 to 60 in several instances following the administration of this drug, and have felt that only deep anesthesia and immediate forceps extraction saved these children.

Fig. 1.—Binder used at the Long Island College Hospital.

For several years, at the Long Island College Hospital, we have used the almost forgotten abdominal binder as a substitute for pituitary extract in the second stage of labor. As this measure is simple and is in accord with a definite physiologic principle, it probably was commonly used before the advent of obstetric for-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

ceps. In a search of the literature of the last seventy-five years, I was unable to find more than an occasional brief discussion of its use. It is not mentioned in most of the modern textbooks. Thirty years ago, however,

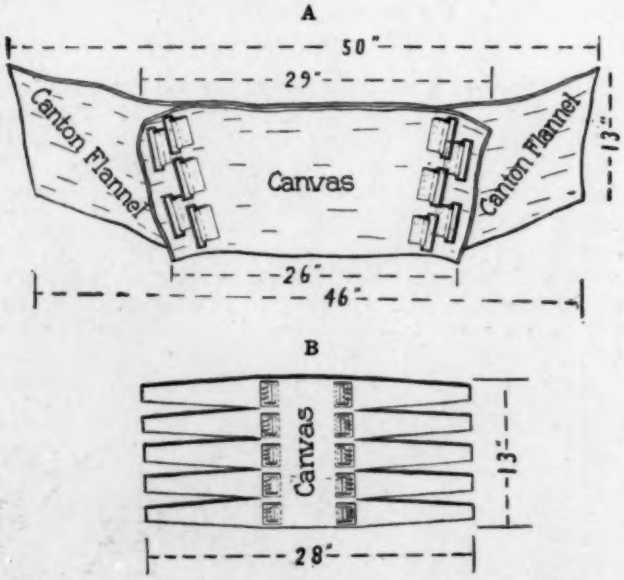


Fig. 2.—Details of the Long Island College Hospital Binder.

the American Text Book of Obstetrics, in discussing the management of the second stage of labor, stated that "an abdominal binder is frequently useful in helping the progress of labor during the second stage, particularly in multiparas having lax abdominal walls."

In the early part of our work, an ordinary binder was used. We soon learned that it could not be applied very snugly, and that the pins frequently were torn out. Because of these difficulties, the binder shown in Figure 1 was devised. It is made in two parts (Fig. 2). The upper section (*A*) is a piece of canvas, 29 inches

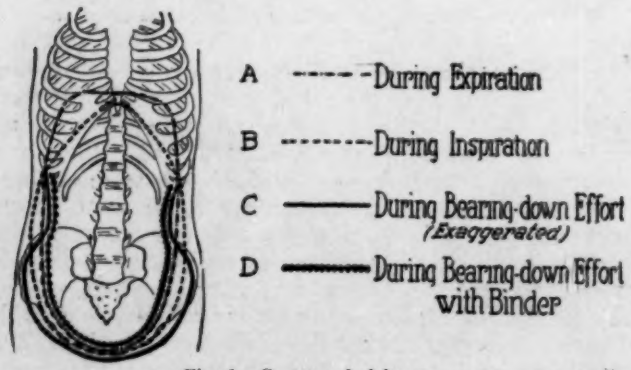

A During Expiration
B During Inspiration
C During Bearing-down Effort (Exaggerated)
D During Bearing-down Effort with Binder

Fig. 3.—Contour of abdomen.

long and 13 inches wide, to each end of which are attached five rings. This is sewed to a canton flannel lining that measures 50 by 13 inches. The lower portion (*B*) likewise is canvas. Its sides terminate in five tails, at the bases of which are attached five buckles.

Part *A* is placed under the patient, and the canton flannel ends are crossed over the abdomen. Part *B* is then laid over these, and the tails are passed through the rings on Part *A*, and fastened by means of the buckles at their bases. Thus, this type of binder can be snugly applied to the abdomen of a woman of any size, and can be tightened or loosened as the case requires. When properly adjusted, it holds the uterus perpendicular to the pelvic inlet and prevents distention of the weaker parts of the abdominal wall, thereby increasing the intra-abdominal pressure and making the bearing down efforts more effective.

The action of an abdominal binder during the second stage is shown in Figure 3, which is a diagrammatic representation of the contour of the abdomen in respiration and during a bearing down effort. The line of dots and dashes (*A*) represents the abdomen during expiration. In inspiration, the diaphragm descends and the abdominal wall expands as shown by the broken line (*B*). When the patient bears down, she takes a deep inspiration, closes the glottis, and contracts her abdominal muscles. As the wall of the abdomen is stronger above the umbilicus, it becomes slightly constricted in this region while the weaker lower abdomen bulges. The solid line (*C*) is a somewhat exaggerated representation of this effect of a bearing down effort. When a binder is used, the weaker parts of the abdominal wall are supported; bulging below the umbilicus is prevented, and the intra-abdominal pressure accordingly is increased, as is shown by the beaded line (*D*).

ADVANTAGES

The last 250 primiparous deliveries that occurred in our service, in which the use of an abdominal binder is a routine measure, were compared with 250 similar cases in which no binder was used, in order that we might learn the value of this measure. In the binder series, the average length of the second stage was 68.7 minutes, while it was 101.6 in the other series. This difference in the duration of the second stage is shown in Figure 4. A more detailed analysis of the second stages in these 500 primiparas is given in Figure 5, which compares the results at fifteen minute intervals. The shaded portion of each circle represents the proportion of second stages that lasted one hour or less.

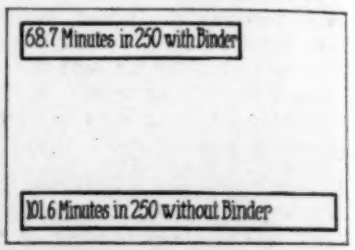


Fig. 4.—Average duration of second stage in 500 primiparous labors.

The abdominal binder also diminishes the need for forceps. In fact, the number of forceps operations in the binder series was only slightly over half that in the other. As may be observed in Figure 6, forceps were required nineteen times in the 250 primiparous labors in which a binder was used, while thirty-five forceps operations were done in the 250 in which a binder was not used. All but one of the nineteen forceps deliveries in the first series were of the low variety, while the midapplication was necessary in seven of the thirty-five forceps cases in the second series. The binder, therefore, not only diminishes the number of cases in which forceps are necessary, but also almost eliminates the need for difficult forceps operations. If the patient is too weak to complete the delivery spontaneously, she can, with the help of a binder, force the head down to the outlet and, in the majority of instances, rotate the occiput to the symphysis.

By shortening the second stage and lessening the need for forceps, particularly midapplications, the infant mortality was diminished. Twelve infant deaths were noted in the 250 primiparous labors in which the binder

was not used, against eight in the 250 in which it was used (Fig. 7). The causes of death of those eight infants were: placenta praevia, one; accidental hemorrhage, one; toxemia, fetal heart not heard on admission, one; dry labor, fetal heart lost in first stage, one; intracranial hermorrhage, two, and unknown, two.

Our experience in more than a thousand additional cases has revealed still other advantages. When borderline dystocia exists, the use of a binder frequently is very helpful. In many instances, engagement takes

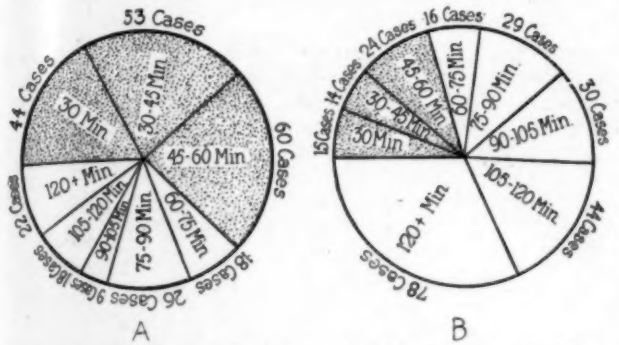


Fig. 5.—Length of second stage in: *A*, 250 primiparas with binder; *B*, 250 primiparas without binder.

place soon after it is adjusted. Unlike pituitary extract, it tends to prevent rather than cause rupture of the uterus in these cases. In occipitoposterior presentation, the head descends and rotates much more quickly after a binder is applied. Therefore, this seldom causes difficulty in our clinic. The binder likewise is of great value in multiparas with relaxed and pendulous abdomen or marked obliquity of the uterus. Here, it not only causes an increase in the intra-abdominal pressure but also, by holding the uterus perpendicular to the pelvic inlet, prevents interference with the normal mechanism of flexion. The aid furnished by the binder also permits us to use more anesthesia and makes possible a painless second stage in the majority of cases.

DISADVANTAGES

1. The aid furnished by the abdominal binder is passive. It therefore is of no value if the patient is too tired to use her voluntary efforts. We avoid this difficulty by resorting to its use at the onset of the second stage, when the bearing down efforts are strong.

2. The increase in the intra-abdominal pressure may affect the child. After each uterine contraction, the lower strap is loosened in order that we may listen to the fetal heart. If the child is in danger, the condition may be relieved at once by loosening the binder.

3. If the progress is too rapid, as frequently is the case in the latter part of the second stage, extensive lacerations may occur. Removal of the binder readily corrects this difficulty.

CONCLUSION

While the use of an abdominal binder as an aid in the second stage is not entirely without risk, its action is always within our control. In this respect it is preferable to pituitary extracts, for, if its effect is harmful, this fact can be easily learned and the condition at once relieved by either loosening or entirely removing the binder.

20 Livingston Street.

ABSTRACT OF DISCUSSION

DR. BERTHA VAN HOOSEN, Chicago: No drug is more dangerous to both mother and child than pituitary extract, if given before delivery is complete. The value of the abdominal binder first came to my attention in the management of diastasis recti. Its successful use in these cases demonstrates the principle underlying its action. Every time the abdominal wall is lifted by the contracting uterus, much energy that might have been used in dilating the cervix or expelling the baby is lost. The abdominal belt that I am using may have an advantage over Dr. Beck's in that it has patent buckles that never slip during adjustment and make possible snugger fit. A few moments after its application, the head of the baby will have descended so that the binder must be made tighter to maintain an unyielding abdominal wall. There are also four slitlike windows in the anterior part of the belt through which a phonendoscope my be inserted for watching the fetal heart rate. I usually apply the binder at the beginning of labor, not only to accelerate the contractions but also to determine whether labor has really begun. If, after the binder is applied, the pains do not become stronger and the cervix does not dilate or efface, labor has not commenced, for the binder, like pituitary extract, will not initiate labor. I wish that Dr. Beck would tell us how his patients feel regarding the belt. My patients complain so bitterly that I try never to apply it till the patient is under scopolamin, nitrous oxid or ethylene anesthesia. At Cook County Hospital, the interns say, "If you put on that belt we shall never get a chance to learn how to apply forceps." Nevertheless, they are able to get many hours of sleep by shortening labor through the use of the belt. I estimate that labor with the belt will take one fourth of the time that it will without the belt. The busy practitioner who wishes a safe method for securing a rapid delivery should use an efficient abdominal binder. This harmless substitute for pituitary extract will save some infants' lives, many exhausted mothers, and a great deal of the physician's time.

DR. JOHN GARDINER, Toledo, Ohio: Dr. Beck and Dr. Van Hoosen have complicated the matter a little, for an ordinary huck towel or small sheet seems to answer every purpose, and one or the other is always at hand. There is no need to carry around any extra device. Thirty or forty years ago, the leaders in American obstetrics were interested in the abdominal binder. Their conclusions were: if there is any diastasis of the rectus muscles, the abdominal binder helps; if there is a pendulous abdomen, the abdominal binder helps; in other words, if the abdominal muscles need support, the abdominal binder helps. There is great question whether we should go farther than this. I have been studying a series of cases, and I find that it is difficult to tell when the first stage of labor ends and the second stage begins. From this series of cases, which I hope to be able to report next year, we have come to the conclusion that any interference with labor before the first stage is completed is disadvantageous to the patient. It seems that the desire to hasten the completion of labor has gripped the profession with vicelike tenacity. Especially is this the case among those in high places. It is right that it should be here, for they have the facilities and equipment behind them for such experimentation. Now, even the binder is not without danger. Sometimes toward the end of the second stage of labor the binder must be removed.

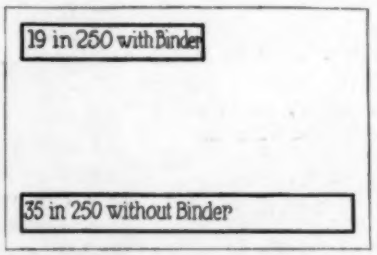


Fig. 6.—Forceps operations in 500 primiparous labors.

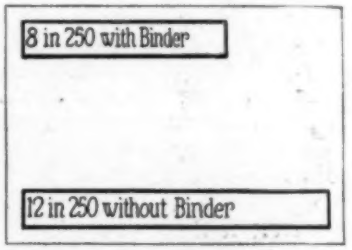


Fig. 7.—Infant deaths in 500 primiparous labors.

In some of these cases the second stage of labor is not very long, and instead of forcing the labor we must quickly restrain the natural forces in order to save the outlet of the birth canal. Presenting the other side of the argument, it is not advisable in many cases to shorten labor. Our ideal should be uninjured, not repaired women.

DR. C. LEE GRABER, Cleveland: I have used the common bath towel and have accomplished at least part of the effects mentioned.

DR. A. C. BECK, Brooklyn: We do not use this binder in the first stage, as its use increases the intra-abdominal pressure, and we feel that this increase in the intra-abdominal pressure in the first stage may cause premature rupture of the membranes. Dr. Van Hoosen's second point, concerning the added discomfort of the patient, has been observed in some of our cases. We find, however, that about half of the patients say that they are more comfortable when the binder is used in the second stage. It supports the back and abdomen. Occasionally, some of them do complain that there is a difficulty, particularly with respiration. Under these circumstances, the upper straps are loosened. There are many other advantages of this binder. We believe that this binder has made occipitoposterior labors easier in most instances because the increased intra-abdominal pressure forces the head down to the pelvic floor and usually completes its rotation. By increasing the intra-abdominal pressure in the second stage, more anesthetic may be used without slowing the labor. It therefore is possible to make the second stage practically painless. Regarding the sheet and the towel, we agree that they are advantageous. Our experience with this binder, however, leads us to feel that it is far superior to either of them.

RESUSCITATION AFTER ELECTRICAL SHOCK *

WILLS MACLACHLAN, B.A.Sc., F.A.I.E.E.
TORONTO

An old Chinese maxim says, "When you put on your clothes remember the labor of the weaver; when you eat your daily bread, think of the hardships of the husbandman." If written today, it might well have added, "When you turn on the light, remember the work of the lineman and the operator." It is in the interest of these men that I would discuss resuscitation after electrical shock. It is not entirely without reason that the electrical profession and industry look to the medical profession for special consideration and assistance. One need only mention the great boon to physicians the now known electrical helps, such as the roentgen ray, are, to say nothing of the future.

In studying the question of electrical shock, certain points stand out. If an electrical current flows from foot to foot, practically no effect will be noticed. If, however, it flows from hand to hand, serious results will ensue. In other words, if the path of the current passes through the thorax, a shock will naturally occur.

If the parts of the body that are in contact with the conductors are dry, a less severe shock will be felt than if the contacts are wet. From this one can see the cause of severe shocks and fatalities from comparatively low voltage circuits in bath rooms.

In low voltage shocks, the effect is usually to cause fibrillation of the heart; in higher voltage shock cases, at first the heart is not involved, but paresis of the respiratory center occurs. In practice, shocks below 220 volts cause fibrillation of the heart, while in shocks of more than 1,000 volts there is little if any immediate effect on the heart, the effect being almost wholly confined to the respiratory center.

Owing to shortness of time, I must leave this subject, but I would direct interest to the lectures by Jex-Blake,[1] a reference very little used on this side of the Atlantic, in regard to electrical shock.

From earliest times, various methods of resuscitation have been put forward. These have been more or less efficient. Two years after the discovery of oxygen, an apparatus using two bellows and feeding oxygen to the patient was used in resuscitation from drowning. In 1829 this method was condemned by the Royal Humane Society, and the bellows were relegated to the fireside. From 1857 to 1903, four important manual methods of resuscitation were promulgated, those of Schäfer and Silvester being the best known. In America, little was known of the Schäfer method until Dr. Schäfer presented the Harvey Lecture in 1909, the Silvester method being universally used and taught in medical schools. Since 1909, the Second Resuscitation Commission under the chairmanship of Dr. Cannon, the Third Resuscitation Commission under the chairmanship of Dr. Meltzer, and the American Gas Association's Resuscitation Commission under the chairmanship of Dr. Drinker have investigated various mechanical and manual methods of resuscitation and have uniformly recommended the prone pressure method.[2]

Various authorities have attempted to evaluate the volume of exchanged air due to the various methods. Owing to the fact that there are a number of variables difficult to reproduce and that the mechanics of the lungs of a person suffering from electric shock, drowning or gas poisoning are difficult to reproduce, to say the least, very different results have been obtained.[3] This, however, has been proved, that the exchange of air which results from the prone pressure method is quite sufficient to maintain life.

It is unnecessary for me to explain the mechanics of the chest here, but it may not be out of place to draw attention to the fact that the prone pressure method more nearly imitates the natural process of breathing than does any other method. It might further be pointed out that it is the easiest method to perform and the least fatiguing, and that it can be performed by one person without assistance.

In the public utility industry, the men are usually scattered in comparatively small groups—often miles away from their headquarters. If provision is to be made for resuscitation, it must be of such a nature that it is always readily available and simple, so that it can be made of use instantly by the average man. It must also be effective, because the saving of a life is at stake and inefficiency cannot be tolerated.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Jex-Blake, A. J.: Death by Electric Currents and by Lightning, Goulstonian Lecture, Royal College of Physicians, London, Brit. M. J., March 1, 8, 15 and 22, 1913.

2. Resuscitation Commission, W. B. Cannon, Chairman: Tr. National Electric Light Association, 1913. Resuscitation Commission, S. J. Meltzer, Chairman: Ibid., 1919. Resuscitation Commission: Cecil K. Drinker, Chairman: Tr. Am. Gas A., 1923. Reports of Accident Prevention Committee: Tr. Nat. Electric Light A.

3. Schäfer, A. E.: The Relation of Certain Methods of Performing Artificial Respiration in Man, Proc. Roy. Soc., Edinburgh, 1903. Description of a Simple and Efficient Method of Performing Artificial Resuscitation in a Human Subject, Especially in Cases of Drowning, Proc. Roy. M. & Chir. Soc., London, 1903-1904. Artificial Resuscitation in Man, Harvey Lectures, 1907-1908. Lauffer, C. A.: Resuscitation, New York, John Wiley & Sons, 1915. Keith, Arthur: Three Hunterian Lectures on the Mechanism Underlying the Various Methods of Artificial Respirations, Practised Since the Foundation of the Royal Humane Society, 1774, Lancet, 1909. Drinker, C. K.: Present Status of Problem of Resuscitation in Cases of Electric Shock and of Carbon Monoxid Poisoning, J. Indust. Hyg. 5: 255 (Nov.) 1923. Meltzer, S. J.: History and Analysis of Methods of Resuscitation, M. Rec. 92: 1 (July 7) 1917.

Having this problem before it, the National Electric Light Association has standardized on the prone pressure method, and the member companies have had many thousands of employees trained in it and required to practice it regularly. The result has been that the lives of a number of employees and the public have been saved as a result of the training and practice.

As a method of recognition, a medal known as the Insull medal has been awarded in meritorious cases. The details of one case may be of interest.

REPORT OF CASE

Feb. 20, 1923, S. L. S., a patrolman employed by the Texas Power and Light Company, and his wife were motoring along a road near Irving, Texas. The man stopped the car and went to take some measurements on a high tension line, and in so doing received a shock that rendered him unconscious. He stopped breathing. Mrs. S. had been trained in resuscitation and immediately went to her husband's assistance. By persevering in applying the method, she was able to resuscitate him. She then assisted him to the truck, and drove the truck into the nearest town, where he was transferred to an ambulance.

Her remark on being presented with the Insull medal was, "By knowledge of this method, I have Steve to share the honor with me."

These awards are made only after a very careful investigation into the facts and the examination of reports made under oath.

The electrical profession and industry are not unmindful of the assistance of the American Medical Association and physicians generally in coping with the question of resuscitation. It feels that since it has assisted in the research and also has trained its employees and insisted that they maintain their efficiency by practice, it can ask for further assistance from the medical profession.

At the time of an accident, the patient is cleared from the current and resuscitation started at once. Then a call is sent for a physician. When he arrives he will usually find men perfectly competent to perform resuscitation carrying out their instructions, and he can be of inestimable value if he can sustain their morale by encouragement and not change the method. The patient's mouth and throat should be cleared, a suitable hypodermic injection given, and measures taken to keep the patient warm. It is wise to withhold morphin until the patient is breathing.

Fig. 1.—Hands in position.

Jex-Blake[1] says: "Nothing less than cooling of the body or the onset of rigor mortis should be taken as evidence of death here." The men have instructions to continue resuscitation until the patient breathes or the onset of rigor mortis. This may be an extreme view, but no harm can occur. It is a general view that resuscitations in the past have been stopped too soon. Authentic cases are on record of patients, after being declared dead, being resuscitated and regaining their former health.

Is it too much to ask, when we have obtained advice as to the best method, had our men trained in the method and require them to practice it, that the attending physician cooperate in sustaining their morale and use every effort to save the life in the balance?

In many papers on resuscitation, it is taken for granted that the method is so well known that it would be a waste of time to give the details. However, a demonstration of the method may not be out of place, and details can more readily be shown.

Fig. 2.—Pressure on.

PRONE PRESSURE METHOD

The victim should be quickly released from the current, care being taken to avoid receiving a shock. Any dry nonconductor (rubber gloves, clothing, wood or rope) may be used to move either the victim or the conductor. Metal or any moist material should not be used. If both the victim's hands are grasping live conductors, an effort should be made to free them one at a time. If necessary, the current should be shut off.

The nearest switch should be opened, if that is the quickest way to break the circuit.

If it is necessary to cut a live wire, an ax or a hatchet with a dry wooden handle should be used, the face being turned away to protect it from an electrical flash.

As soon as the victim is clear of the live conductor, a finger should be put in his mouth and throat to remove any foreign body, such as tobacco or false teeth. If the mouth is tight shut, no attention should be paid to the foregoing instructions until later, but resuscitation should be immediately begun. The patient will breathe through the nose, and, after resuscitation has been carried on a short time, the jaws will probably relax and any foreign substance in the mouth can then be removed. No time should be taken to loosen the patient's clothing as *every moment of delay is serious.*

The patient should be laid on the abdomen, one arm extended directly overhead, the other arm bent at the elbow, and with the face resting on the hand or the forearm so that the nose and mouth are free for breathing (Fig. 1).

The resuscitator should kneel, straddling the patient's hips, with the knees just below the patient's hip bones or the opening of the trousers' pockets. The palms of the hands should be placed on the small of the back with the fingers resting on the ribs, the little finger just touching the lowest rib, the thumb alongside the fingers, the tips of the fingers just out of sight (Fig. 1).

With the arms held straight, the resuscitator should swing forward slowly so that the weight of his body is gradually brought to bear on the subject (Fig. 2). This operation, which should take from two to three seconds, must not be violent, as internal organs may be injured. The lower part of the chest and also the abdomen are thus compressed, and the air is forced out of the lungs; the diaphragm is kept in natural motion; other organs are massaged, and the circulation of the blood is accelerated.

Now the resuscitator should immediately swing backward so as completely to remove the pressure, thus returning to

the position shown in Figure 3. Through elasticity, the chest wall expands and, the pressure being removed, the diaphragm descends, and the lungs are thus supplied with fresh air.

After two seconds, the resuscitator should swing forward again. Thus the double movement of compression and release should be deliberately repeated from twelve to fifteen times a minute, a complete respiration being made in four or five seconds. If a watch or a clock is not visible, the natural rate of the resuscitator's own deep breathing should be followed. The proper rate may be determined by counting—swinging forward with each expiration and backward with each inspiration.

As soon as this artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient's neck, chest and waist. The patient should be kept warm. Ammonia should be placed near the nose, the safe distance being determined by first trying how near it may be held to the resuscitator's own nose. No liquids whatever should be given by mouth until the patient is fully conscious.

Artificial respiration should be continued without interruption (if necessary for four hours) until natural breathing is restored. Cases are on record of success after three and one-half hours of effort. The ordinary tests for death are not conclusive in cases of electrical shock.

When the patient revives, he should be kept lying down and not allowed to get up or to be raised under any consideration.

The patient should then have any other injuries attended to and he should be kept warm, being placed in the most comfortable position.

Fig. 3.—Pressure off.

Resuscitation should be carried on at the nearest possible point to which the patient received his injuries. He should not be moved from this point until he is breathing normally of his own volition, and then should be moved only in a lying position. Should it be necessary, owing to extreme weather conditions, to move the patient before he is breathing normally, he should be kept in a prone position and placed on a hard surface (door or shutter or the floor of a conveyance), resuscitation being carried on during the time that he is being moved.

A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently, the patient, after a temporary recovery of respiration, stops breathing again. The patient must be watched, and if normal breathing stops, artificial respiration should be resumed at once.

Those responsible for the minimizing of the effects of electrical shock know well that the last word has not been said on the subject. They know, however, that in regard to the setting up of artificial respiration, the prone pressure method has proved to be the most efficient and the easiest to teach to men and to carry out. There are other points that need careful study, such as correcting the fibrillation of the heart and shortening the duration of the paralysis of the respiratory center. Careful research work is needed here.

In the meantime, however, much can be gained by the cooperation of the American Medical Association and the attending physicians with the electrical industry in standardizing the prone pressure method as the treatment for electrical shock. The men are trained in this method, and their efficiency is maintained by practice. Is it too much to ask physicians to assist?

802 Excelsior Life Building.

RESUSCITATION

FROM CARBON MONOXID ASPHYXIA, FROM ETHER OR ALCOHOL INTOXICATION, AND FROM RESPIRATORY FAILURE DUE TO OTHER CAUSES; WITH SOME REMARKS ALSO ON THE USE OF OXYGEN IN PNEUMONIA, AND INHALATIONAL THERAPY IN GENERAL *

YANDELL HENDERSON, PH.D.
NEW HAVEN, CONN.

A large proportion of all deaths, perhaps the majority from all ultimate causes, are immediately due to failure of respiration. The prevention of even a small fraction of them will amount in the aggregate to the saving of a very large number of lives. The procedures and apparatus of which I shall speak have already demonstrated their capacity to save these lives, and probably more. The methods lie in a nearly new field of therapeutics, a field which we may call inhalational therapy. It is sometimes a useful accessory and sequel to artificial respiration. But it is of much greater scope than mere artificial respiration.

MANUAL ARTIFICIAL RESPIRATION

Others are to deal primarily with the topic of artificial respiration. I will merely add my testimony to theirs in support of the conclusion reached by every one of the scientific commissions [1] that have studied this subject. This conclusion is that, for the treatment of electric shock, drowning, and other conditions producing complete cessation of breathing, the Schäfer manual prone pressure method [2] should be used in preference to any other. The use of artificial respiration apparatus should be discouraged, for the simple manual method is much more effective. There is some evidence that mechanical devices may even be injurious to the lungs. These apparatus have few, if any, well substantiated cases of resuscitation to their credit. On the other hand, hundreds of lives have been saved with the manual method.

It is essential that the medical profession should learn the prone pressure method and should realize the importance of applying it immediately in all cases in which respiration has been stopped by an electric shock, drowning or asphyxia. All employees of electric light companies and telephone companies, all boy scouts, and a large number of the better trained policemen and firemen now know how to administer the prone pressure

* From the Laboratory of Applied Physiology, Sheffield Scientific School, Yale University.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Report of the Commission on Resuscitation from Electric Shock, New York, National Electric Light Association, 1913. Report of the Committee on Resuscitation from Mine Gases, Technical Paper 77, Washington, D. C., U. S. Bureau of Mines, 1914. Work of the Commission on Electric Shock, editorial, J. A. M. A. **61**: 1637 (Nov. 1) 1913. Proceedings and Resolutions of the Third Resuscitation Commission, Science **48**: 563 (Dec. 6) 1918. Drinker, K. R.: Drinker, C. K., and Redfield, A. C.: J. Indus. Hyg. **6**: 109 (Aug.) 1923. Final Report of the Commission on Resuscitation from Carbon Monoxid Asphyxia, ibid. **6**: 125, 1923.

2. Schäfer, E. A.: Harvey Society Lectures for 1907-1908, New York, 1909, p. 223.

method. It is sometimes charged against the medical profession that in cases of drowning and electric shock, in which lives probably could be saved by the immediate and continued application of this most effective method of artificial respiration, lives have been lost because the first physician who reached the case was unacquainted with the method. He has therefcre ordered the electric lineman or policeman or boy scout who was administering the prone pressure method effectively, and was well on the way to saving life, to desist. He has then either declared the patient dead or has called an ambulance and sent him to the hospital, where he arrived dead. If there is any basis for this charge, it is time that the medical profession removed it by learning the prone pressure method.

It is only fair to add also that, in ordinary medical practice, a physician in the past has rarely seen cases requiring artificial respiration. Often he fails to realize that a perfectly healthy young man, whose breathing has been temporarily stopped by an electric shock or by immersion in water, is a very different subject from the patient who stops breathing after a long and wasting, or acute and destructive, illness. Often, in the drowning or electric cases, the vital machine merely needs to be started again. It is like cranking an automobile when the engine has stalled and the self-starter is out of order. With the increasing use of electricity, not only for transportation and industry, but also in our homes, for light, for cooking, and, most dangerous, for the laundry, electric shock has come to be one of the ordinary hazards of modern life, and every one should know how to render first aid. The essentials of artificial respiration are that it should be applied without the loss of a moment, without waiting to telephone or send for apparatus, and that, even if the patient is at first pulseless and apparently dead, it should be continued for three hours, or until spontaneous breathing returns, or rigor mortis develops.

Two points more in this connection are: 1. In my opinion, it is the duty of the National Electric Light Association, under present conditions, to keep a standing advertisement in the principal medical journals showing the prone pressure method with the standard descriptions and diagrams of the procedure. 2. I will also take this opportunity to call attention to certain ethical and economic conditions that seriously obstruct greatly needed investigations and development in this and related topics of immense importance in the field of industrial medicine. The scientific men who have served on the four successive commissions on resuscitation in the last decade have rendered a service that has not only saved hundreds, or more probably thousands of lives, but also millions of dollars in compensation claims. It has cost the immensely wealthy electric industry and interests of America virtually nothing. They have as yet made in return no contribution whatever, even to support the scientific work of the men who have rendered this service. This is no fault of the electric association, for no request of the sort has ever been made to it. It was the American Medical Association which, if I remember rightly, appointed the first commission and asked its members to serve. All medical authorities tacitly assume that it is unethical for any money to pass except between the private patient and his personal physician. So for the information of representatives of our billion dollar commercial interests I wish to give this advice: If one has a great legal question involving millions, an eminent lawyer should be employed and he will charge accordingly. For engineering questions, great engineers should be employed at almost as high a price. But if it is a question of life and health, the American Medical Association should be asked to appoint a commission of men expert in that line. Such men are usually far from having adequate means for even their scientific work, let alone their own and their family's support. Nevertheless, they will spend months or years on the problem; and they will probably render a service which, even in dollars, is exceedingly valuable to the commercial interest concerned. And medical ethics will require that they render this service for nothing.

Such misguided idealism reduces itself to an economic absurdity and defeats its own purpose. Like the so-called "full-time plan," which has done enormous injury to American medical scientific investigation and investigators, it prevents the investigator in this field from earning his living and the means to carry on his researches out of the honest wages of honest work. Instead, he is subjected more and more to the eleemosynary despotism of the great foundations and the endless red tape of the National Research Council.

PREVENTION OF RESPIRATORY FAILURE

The main topic to which I wish particularly to call attention is a broad one and occurs repeatedly in the experience of every physician and continually in every hospital. It is that of preventing failure of respiration. It applies, with variations, to carbon monoxid asphyxia, to acute intoxication under alcohol and many other volatile poisons, to the depression following anesthesia, to morphin poisoning, to asphyxia of the new-born infant, and to a number of other conditions. It has, in fact, very wide applications in most of the branches of medicine and surgery.[3]

Suppose that we are confronted with a case of any of the types just mentioned, in which death from respiratory failure is threatening or evidently approaching: There is no need as yet for artificial respiration, for natural breathing still continues; but it is growing weaker. When it stops it will be too late. How are we to reason regarding such a case? What are we to do to effect resuscitation and restoration to normal life?

First, we know now that the stimulant which Nature herself uses to maintain breathing is carbon dioxid. It is the increased production of carbon dioxid during muscular exercise that causes the corresponding increase in the volume of air breathed. It thus provides the increased supply of oxygen to meet the increased need. Conversely, if the carbon dioxid in the blood is abnormally decreased by excessive breathing, we know from well established experiments that respiration is liable to stop until the normal amount of carbon dioxid reaccumulates in the blood and again stimulates the respiratory center.

Secondly, we know that oxygen deficiency, if at all intense, acts as a sort of whip, which excites respiration to activity, and even to excessive activity, but injures at the same time and is liable to be followed by a subsequent period of depressed breathing.

Thirdly, and no less important, we know that pure oxygen, or air enriched with oxygen, is not a respiratory stimulant. On the contrary, under some conditions

3. Henderson, Yandell: Bull. Johns Hopkins Hosp. **21**, No. 233, 1910. Henderson, Yandell; and Haggard, H. W.: The Treatment of Carbon Monoxid Poisoning, J. A. M. A. **77**: 1065-1067 (Oct. 1) 1921. Report of the Committee on Anesthesia of the American Medical Association, J. A. M. A. **58**: 1908 (June 15) 1912. Henderson, Yendell; and Bryant, John: Closed Ether and a Color Sign, J. A. M. A. **65**: 1 (July 3) 1915.

it is, in effect, a powerful depressant of breathing. Many years ago, Mosso [4] observed what he called "oxygen apnea," or cessation of breathing induced by oxygen. From the observations of Haldane and his collaborators [5] and from my own work,[6] the following partial explanation or, rather, description of this important phenomenon, may be offered. When a man or animal is exposed to a deficiency of oxygen for a time, his breathing is greatly augmented and he blows off more carbon dioxid than the body can well afford to lose from its store of carbonic acid and bicarbonates. If, then, he is suddenly given oxygen, or even merely fresh air, a marked decrease in respiration occurs. The breathing may even stop entirely. I have seen death follow in an animal given pure oxygen suddenly after incomplete carbon monoxid asphyxia. It is well known to the men in our city fire departments that a man who has been working in the fumes of a burning building often collapses when he comes out into fresh air. The same effect is known among mine rescue crews. Often, they walk out of the gases in a burning mine with fair vigor and coordination of movement, but fall unconscious after drawing a few breaths of fresh air. In the laboratory, animals that have been kept in a gassing chamber until slightly groggy with carbon monoxid sometimes collapse when removed into fresh air.[7] Similarly, athletes seldom collapse during a competition, but when the race is over, with its strain on the oxygen-supplying power of lungs and heart, they pant heavily for a few minutes and then collapse. In all these cases we see marked depression coincident with abundant oxygen after a period of oxygen deficiency.

It is not possible as yet to give a complete explanation of these events, but we can note their similarities and recognize that certain features are common to nearly all of them. Probably in all cases excessive blowing off of carbon dioxid occurs during the period of oxygen deficiency and excessive breathing. The deficiency of oxygen, meanwhile, either by itself or through some incomplete combustion product, keeps respiration working, and working even excessively. But when a full supply of oxygen is renewed, this anoxemic stimulus is removed. The deficiency of carbon dioxid then allows respiration to fail.

The condition of deficiency of carbon dioxid [8] is called "acapnia," from the Greek καπνός, smoke. Literally, acapnia means smokelessness. It tends to be overcome spontaneously as the carbon dioxid produced in the body reaccumulates in the blood. But this may require a long period, and while the condition lasts it profoundly disturbs the acid-alkali balance in the blood. It forces alkali out of the blood and may induce an extreme and rapid decrease in the alkali reserve.[9] It thus induces what is now called acidosis.

It used to be common to think that deficiency of oxygen was necessarily associated with excess of carbon dioxid in the blood. This may perhaps be the case in drowning, but under nearly all clinical conditions we actually find anoxemia and acapnia associated. This combination of deficiency both of oxygen and of carbon dioxid is capable of inducing profound functional disturbances. Not only is the blood alkali lowered, but such conditions as edema of the brain and congestion of the lungs may result. Space forbids a full account or an attempt at analysis of this combination of interacting causes. Let us rather turn to the question as to the conditions under which they occur and the effective method of resuscitation.

Obviously, inhalation of oxygen alone is not under such conditions a logical procedure. Only in pneumonia must we recognize an exception to this statement. Under nearly all other conditions, oxygen administered for purposes of resuscitation should contain also a sufficient amount of carbon dioxid to stimulate the breathing. Usually, 5 per cent. of carbon dioxid is sufficient in from 90 to 95 per cent. of oxygen. It is the use of this mixture administered by a special type of inhaler, the so-called "H. H. inhalator," devised by us, which is the essential feature of the treatment introduced by my associate, Dr. H. W. Haggard, and myself and approved by the last resuscitation commission.[10]

CARBON MONOXID ASPHYXIA

The field in which inhalation of oxygen plus carbon dioxid has made its most definite and extensive success is that of carbon monoxid asphyxia. In nearly all our cities the number of deaths from this cause is large. It is exceeded only by a few of the most important diseases; and, unlike most diseases, deaths from carbon monoxid are steadily increasing in number. As a cause of mortality, it is nearly as important as diabetes. Carbon monoxid has probably displaced lead as the most important industrial poison. More than 400 deaths a year are assigned in New York City to the city gas.[11] The public demands cheap gas; cheap gas means a high content of carbon monoxid; and the fatalities rise accordingly. It is quite possible that, by scientific research, improvements in gas manufacture could be developed that would afford a gas for lighting, heating and cooking with distinct economic advantages (higher in methane and lower in carbon monoxid) and at the same time much less poisonous. If the carbon monoxid content were reduced one-half, the deaths would probably be reduced to a quarter or less of the present figures. But this great industry has as yet no central research institute for such investigations—an extremely short-sighted policy. I am glad to be able to add, however, that the American Gas Association supplied the funds by which the inhalational treatment of carbon monoxid was developed.

In many industries, carbon monoxid is one of the chief health hazards, notably around blast furnaces and in mines. Every stove, in a dwelling house, that can be checked to the point of incomplete combustion may give off carbon monoxid and asphyxiate its owner and his family. When natural gas is used in imperfect appliances, dangerous amounts of carbon monoxid are produced.[12] In the smoke from burning buildings it is the chief toxic constituent; it is one of the dangers that the city firemen face. It is the chief toxic constituent

4. Mosso, A.: Arch. Ital. Biol. **41**: 138, 1904. Henderson, Yandell: Am. J. Physiol. **25**: 329, 1910.

5. Haldane, J. S.: Respiration, New Haven, Yale University Press, 1922. Haldane, Kellas and Kennaway: J. Physiol. **53**: 181, 1919.

6. Henderson, Yandell; and Scarbrough, M. M.: Am. J. Physiol. **26**: 260, 1910. Henderson, Yandell: Science **49**: 431, 1919. Henderson, Yandell; and Haggard, H. W.: J. Biol. Chem. **43**: 1, 1920; **47**: 421, 1921.

7. Haggard, H. W.: Studies in Carbon Monoxide Asphyxia, Am. J. Physiol. **56**: 390 (July) 1921, and personal communication to the author.

8. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: The Acapnia Theory, J. A. M. A. **77**: 424-426 (Aug. 6) 1921.

9. Henderson, Yandell; and Haggard, H. W.: J. Biol. Chem. **33**: 345 (Feb.) 1918; **43**: 3 (Aug.) 1920.

10. Henderson, Yandell; and Haggard, H. W.: Report I of Commission on Resuscitation from Carbon Monoxid Asphyxia to American Gas Association, J. A. M. A. **79**: 1137-1145 (Sept. 30) 1922. Drinker, C. K.: J. Indust. Hyg. **5**: 255 (Nov.) 1923. Sayers, R. R., and Yant, W. P.: Pub. Health Rep. **38**: 2053 (Sept.) 1923. Sayers, R. R.; Yant, W. P., and Jones, G. W.: Ibid. **38**: 2311 (Oct. 5) 1923.

11. Report of the Chief Medical Examiner of the City of New York, 1918-1921, p. 27.

12. Jones, Berger and Holbrook: Technical Paper 337, Dept. of the Interior, Bureau of Mines, 1923. Brumbaugh and Jones: Technical Paper 212, Dept. of Commerce, Bureau of Standards, 1922. Hayhurst, E. R.: Am. J. Pub. Health **13**: 462 (June) 1923. Monger, J. F.: Radio bulletins, etc., on carbon monoxid, Department of Health, State of Ohio, Columbus.

of automobile exhaust gas.[13] The 10,000,000 or 15,000,000 automobiles, in which we Americans get our transportation, our recreation and our favorite atmosphere, discharge an average of about 2 cubic feet per car each minute. Even a Ford produces at least a cubic foot of carbon monoxid a minute, enough to render a small closed garage deadly in five minutes. Men who work in garages and repair shops are almost daily subjected to partial intoxication by carbon monoxid.

Suppose now that a man is overcome by inhaling a fairly high concentration of carbon monoxid under any of the foregoing conditions; his legs give way under him before he realizes his own condition. If he is fortunate enough to be discovered before death, he is dragged or carried out of the garage, out of the trench in the street, or away from the blast furnace, where he has been working. If he has stopped breathing, his rescuer immediately applies the prone pressure method. At the same time, another person holds against his face the mask of the inhalator so that the artificial respiration draws into the lungs the oxygen and carbon dioxid, supplied from a tank in which this mixture of compressed gases is held. The carbon dioxid thus tends to stimulate spontaneous breathing and artificial respiration should then be discontinued, but the inhalation should be continued for from fifteen to thirty minutes longer.

This is not a fanciful account of an imaginary case, but of the actual features of a large and rapidly increasing number of resuscitations of which we have record. There are certain extraordinary sequels. After such a short but acute gassing, a man who survives without having been treated with oxygen and carbon dioxid is always acutely sick with splitting headache and nausea, lasting for two or three days. Recent investigations by Forbes[14] in my laboratory have afforded strong evidence from animal experiments that this headache is due to a congestion and edema of the brain. Forbes has published photographs showing the brain bulging out through a trephine hole. The available data from men indicate a similar edema of the brain. On the other hand, our records show that men who have suffered a short but acute gassing, and have then been treated with oxygen and carbon dioxid, often escape this headache and nausea almost entirely. Instead of going to bed for a day or two, they often go back to work within an hour after being comatose.

Evidence from both the laboratory and clinical cases demonstrates conclusively the reason why spontaneous recovery without treatment is so slow and painful, and why, on the other hand, the inhalation treatment may produce such brilliant results in suitable cases. The reason is that an untreated man may lie for hours with subnormal breathing, and the carbon monoxid is therefore eliminated so slowly that the asphyxia continues long after he is removed from the poisonous atmosphere. On the other hand, when the inhalation treatment is applied, the carbon dioxid administered induces deep, full breathing; it thus draws the oxygen, with which it is mixed, into the lungs in such large amounts that carbon monoxid is rapidly displaced from the blood. The blood itself and, apparently, the brain also are thus rapidly restored to a nearly normal condition. The reason that a special type of inhaler is necessary is that it must allow adjustment to the greatly augmented breathing of the patient with no waste of the oxygen and carbon dioxid.

We already have records of patients thus treated and revived not only in many parts of the United States, but from Alaska on the west to Norway on the east. I have correspondence with mining authorities in England and with the government bureau of industry in Holland looking to the introduction of the inhalation treatment as the approved method of resuscitation. Under the conditions existing in our American cities today, every hospital ambulance should carry an inhalator. Every company of the city fire departments also should have one. When a fireman is overcome by smoke, a short inhalation will not only prevent illness and save him, perhaps, from a damaged heart; it also will enable him to go back to work and help put out the fire. As regards the use of an inhalator on the ambulance, experience is showing that it helps to save life, until the patient can be brought to the hospital, not only in cases of asphyxia, but in a wide variety of forms of respiratory failure, including even concussion of the brain.

In the treatment of cases of prolonged asphyxia in which the gas has been turned on all night, such brilliant results cannot be expected. We were at first doubtful regarding the extent of benefit that could be expected. Accumulating cases show, however, that even after prolonged asphyxia and after the loss of time involved in calling an ambulance and sending a patient to the hospital, the inhalation treatment may still be of great benefit in preventing such sequelae as nerve degenerations and the pneumonia, which heretofore has been common. I am indebted to Dr. K. A. Martin[15] for a report on a case of this sort at the New Haven Hospital.

An elderly man and his wife living in a small houseboat were asphyxiated by the fumes from a stove. The woman was dead when found in the morning, the man comatose. A couple of hours later, in the hospital, the man's blood still contained 52 per cent. of carbon monoxid, and artificial respiration had several times been necessary to prevent death in the ambulance. Oxygen and carbon dioxid mixed in a Tissot spirometer were then administered for two hours. Normal breathing returned, and the carbon monoxid in the blood was reduced to 11 per cent. Four hours later, the patient was conscious, although stupid. He made an uneventful recovery, and walked home on the seventh day.

When we began using this treatment, we were at first afraid that it might overwork the heart; but experience has demonstrated that there is no such risk. The stimulation is a very mild one. Perhaps the most surprising and gratifying result has been the prevention of postasphyxial pneumonia, which this treatment evidently effects. Heretofore, as nearly as we can estimate, about one third of all persons severely gassed, but not dying under asphyxia, have later died in the hospital from pneumonia. We therefore made an examination of the lungs of animals that had been asphyxiated and found an extraordinary degree of congestion. This confirms an observation previously reported by David[16] regarding oxygen deprivation. At our suggestion also several physicians have made careful physical examination of patients who, after severe but not fatal gassing, were brought to the hospital.

13. Fieldner, Straub and Jones: J. Indust. & Engin. Chem. **13**: 55, 1921. Henderson, Yandell; Haggard, H. W.; Teague, M. C.; Prince, A. L., and Wunderlich, R. M.: J. Indust. Hyg. **3**: 79-92 (July) 1921; **3**: 137-146, 1921. Henderson, Yandell; and Haggard, H. W.: Health Hazard from Automobile Exhaust Gas in City Streets, Garages and Repair Shops, J. A. M. A. **81**: 385-391 (Aug. 4) 1923.

14. Forbes, H. S.; Cobb, Stanley; and Fremont-Smith, Frank: Cerebral Edema and Headache Following Carbon Monixid Asphyxia, Arch. Neurol. & Psychiat. **2**: 264-281 (March) 1924.

15. Martin, K. A.: Personal communication to the author.

16. David, O.: Ztschr. f. klin. Med. **74**: 404, 1912.

Extensive râles are found to be common. In view of these facts, it is highly significant that not a single patient in all those of whom we have record has developed pneumonia after being treated by the inhalation method. The pulmonary congestion, like the brain edema, seems to be cleared up by this treatment.

ELIMINATION OF VOLATILE POISONS

The most rapid and the most effective method of eliminating a volatile poison from the body is to administer an inhalation of oxygen or air containing enough carbon dioxid to increase the volume of breathing four or five times. Men overcome by fumes of gasoline and other volatile substances have thus been successfully treated. But the most interesting cases are those of acute alcoholic intoxication. I am indebted to Dr. Means [17] for a report on two cases of this sort. The tests were made by two Harvard medical students, Hunter and Mudd, at the Boston City Hospital. Both the patients treated were comatose, and by actual measurement with a spirograph were breathing subnormally. Inhalation of air and carbon dioxid sufficient to cause deep, full breathing, for half an hour in one case and a total of about an hour in the other, restored consciousness and there was no subsequent nausea or vomiting.

Ethyl alcohol is burned in the body, but methyl alcohol is not. It may be accumulated from day to day until disastrous symptoms, particularly blindness, develop. Observations to be published by my associate, Dr. H. W. Haggard, indicate that the lungs are probably ordinarily almost the sole avenue of elimination of this poison. The absolute amount passed in the urine is very small. Stimulation of breathing by inhalation of carbon dioxid is, therefore, an almost specific treatment for this important form of poisoning. Dr. Haggard's experiments on animals indicate this strongly, but clinical observations are still lacking.

TREATMENT OF MORPHIN NARCOSIS

It is well established that death from morphin poisoning is due to failure of respiration. The respiratory center becomes relatively insensitive to the stimulus of carbon dioxid. In other words, more carbon dioxid is necessary in order to induce breathing. When morphin is administered prior to anesthesia, it sometimes happens that the patient is unusually sensitive to the drug and that respiration is dangerously depressed. In such cases, inhalation of carbon dioxid in oxygen or air has proved strikingly effective, when otherwise the patient would almost certainly have died. From several hospitals I have received reports of lives saved in this way.

INHALATION OF CARBON DIOXID AFTER ANESTHESIA

The use of inhalations containing carbon dioxid to stimulate respiration and accelerate the elimination of volatile anesthetics is now on a firm basis of proved clinical value. It has saved a number of lives in several different hospitals. The most complete test of this procedure yet published is that by White [18] from the Massachusetts General Hospital. He has confirmed the results of Haggard, Coburn and myself [19] in all practical aspects. In what I shall say on this subject, I am indebted also to Dr. Sword,[20] who in his service as anesthetist at Grace Hospital, New Haven, has used carbon dioxid inhalations in more than 100 cases of all types. He tells me that he finds it particularly useful as an adjunct to ethylene anesthesia.

After anesthesia, respiration is often so much depressed that the elimination of the anesthetic is very slow, especially when considerable amounts of ether have been used, and the patient undergoes a prolonged period of partial asphyxia. The inhalation of carbon dioxid in air or oxygen induces an increase in the volume of breathing, which rapidly ventilates the anesthetic out of the body. It thus prevents the occurrence of the usual period of partial asphyxia. In practice, it is found that vomiting, nausea and gas pains are greatly decreased. Arterial pressure is quickly restored to a normal level and the blood alkali is brought back to normal.

White has reported cases in which, after brain operation, respiration was failing and life was saved by gradually lessening inhalation of carbon dioxid for several hours. Sword has found that cases of otherwise uncontrollable postoperative hiccup were controlled and the patient's life saved by inhalation of carbon dioxid. He reports also that in obstetric cases, after prolonged analgesia with gas oxygen and ether previous to delivery, when the infant has not breathed spontaneously and the routine methods have seemed to fall short, oxygen and carbon dioxid have been of value in initiating spontaneous respiration. Both White and Sword have found that whenever, in the course of anesthesia and operation, respiration shows signs of failure, the addition of carbon dioxid to the anesthetic has been effective in restoring full breathing. In a thorough experimental analysis of ether anesthesia, Haggard [21] has shown that carbon dioxid should be used also to hasten the beginning of anesthesia.

The occurrence of acidosis following anesthesia has been alleged in some quarters [22] as a reason against the use of carbon dioxid. This is a purely theoretical point; the objection is really quite unsound and unjustified either in theory or in fact. It arises from the mistaken conception, which many biochemists now seem to hold, that blood in a beaker may be taken as equivalent to blood in the body. They forget that the one is not subject to vital control, but is a mere chemical system, while the other is subject to those regulations and adjustments which are the essence of the living organism.

It is true that the alkaline reserve is often considerably decreased after anesthesia. All investigators have found this.[23] I believe that I was one of the first to observe it, long before the present terminology was in use.[24] It has been demonstrated also that the hydrogen-ion concentration of the blood at this time is increased. This means simply that respiration is relatively depressed, for if respiration were increased as much as the alkali is decreased, the hydrogen-ion concentration would be normal. It is true that, if blood of low alkali content is exposed to an atmosphere high in carbon dioxid, its hydrogen-ion concentration is greatly increased. This is true in a beaker, but it is practically not true in the body, or true only temporarily, for, as Haggard and I have shown, the inhalation of carbon dioxid rapidly

17. Means, J. H.: Personal communication to the author, later published by Hunter, F. T., and Mudd, S. G.: Carbon Dioxide Treatment in Acute Alcoholic Intoxication, Boston M. & S. J. **190**: 971 (June 5) 1924. Compare The Treatment of Acute Alcoholic Intoxication, editorial, J. A. M. A. **83**: 199 (July 19) 1924.

18. White, J. C.: Deetherization by Means of Carbon Dioxid Inhalations, Arch. Surg. **7**: 347-370 (Sept.) 1923.

19. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: The Therapeutic Use of Carbon Dioxid After Anesthesia and Operation, J. A. M. A. **74**: 783-786 (March 20) 1920.

20. Sword, B. C.: Personal communication to the author.

21. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether, J. Biol. Chem. **59**: 753, 1924.

22. Reimann, S. P.; Bloom, G. H., and Reimann, H. A.: Administration of Carbon Dioxid After Anesthesia and Operation, J. A. M. A. **76**: 437 (Feb. 12) 1921.

23. Van Slyke, D. D.; Austin, J. H., and Cullen, G. E.: J. Biol. Chem. **53**: 277 (Aug.) 1922 (full literature). Cullen, G. E.; Austin, J. H.; Kornblum, K., and Robinson, H. W.: J. Biol. Chem. **56**: 625 (June) 1923.

24. Henderson, Yandell; and Scarbrough, M. M.: Acapnia as a Factor in the Dangers of Anesthesia, Am. J. Physiol. **26**: 260, 1910.

recalls alkali to the blood.[9] Inhalation of carbon dioxid is, in fact, an effective method, after anesthesia and after carbon monoxid asphyxia, for restoring the blood alkali and the hydrogen-ion concentration to normal values. It is generally assumed that, in so-called acidosis, a part of the blood alkali is neutralized by organic acids, such as lactic acid. From recent observations of Anrep and Cannan,[25] it appears that the inhalation of carbon dioxid by temporarily increasing the hydrogen-ion concentration leads to a rapid burning up of lactic acid in the tissues. The blood alkali is thus increased. The effect of carbon dioxid inhalation in restoring the blood alkali to a normal value and overcoming postanesthetic acidosis may be due to such a process as Anrep and Cannan have demonstrated experimentally. Whatever the process may finally prove to be, the inhalation of carbon dioxid after anesthesia is certainly extremely beneficial to the patient.

OXYGEN INHALATION IN PNEUMONIA

It seems to be accepted that, in acute cases of pneumonia, oxygen inhalations may shift the balance as between a fatal outcome and recovery. There is as yet, however, no apparatus available and generally accepted as an efficient inhaler for this purpose.

It is obvious that, under the conditions of respiratory distress existing in pneumonia, carbon dioxid should not be added. But I have received from a number of my clinical friends, in various places, the suggestion that the inhaler which we have used could be effectively adapted to administering oxygen in pneumonia. Of course, when it can be afforded, an oxygen chamber such as that in use in the hospital of the Rockefeller Institute is preferable. But not many hospitals can afford this luxury, and such a chamber has disadvantages of its own, especially the danger of fire. I have mentioned this matter now merely to say that the H. H. inhalator is already in use in some hospitals for the administration of oxygen and that we have arranged for a hospital type of this apparatus which can be used either with oxygen plus carbon dioxid or with oxygen alone. It is shown among the exhibits at this session.

CONCLUSION

Heretofore, a medical man suddenly confronted by a patient in nearly any one of the conditions mentioned above has generally confined himself to administering a hypodermic injection. This is the ambulance physician's favorite contribution to resuscitation. I have given no space whatever, not a single word, to this matter in this paper, and this amount of space exactly expresses my estimate of its value to the patient.

Physicians must learn the principles and methods of resuscitation—both the prone pressure method of artificial respiration and the principles involved in counteracting respiratory failure by inhalation therapy.

The chief principle of this therapy is that of using a mixture of oxygen and carbon dioxid. Carbon dioxid to stimulate the respiratory mechanism to full deep breathing; to flush and flood the blood in the lungs with oxygen, and to ventilate out of the blood any volatile toxic substance. To combat respiratory failure in this way is to use Nature's own agencies to assist Nature toward recovery.

Occasionally a clever intern may extemporize resuscitation apparatus out of a tank of carbon dioxid from the pathology laboratory, one of oxygen from the anesthetist, and a spirometer from the metabolism room, and thus may save a life. It is hard work, but it can be and has been done. In general, however, if the methods here described are to accomplish all that they should, all general hospitals must be equipped with inhalators specially designed for this purpose and the staff must become accustomed to using them.

4 Hillhouse Avenue.

25. Anrep, G. V., and Cannan, R. K.: J. Physiol. **58**: 244 (Dec.) 1923. Evans, C. L.: J. Physiol. **56**: 146 (May) 1922.

ABSTRACT OF DISCUSSION

ON PAPERS BY DRS. MACLACHLAN AND HENDERSON

MR. CHARLES B. SCOTT, Chicago: The National Electric Light Association will be glad not only to cooperate with the medical profession in the research referred to by Dr. Henderson, but also to contribute to it.

DR. J. BIRNEY GUTHRIE, New Orleans: Dr. Henderson put us in his debt several years ago, by pointing out the utility of combining carbon dioxid and oxygen inhalation in the resuscitation of the asphyxiated. It seems that right now we have to make a campaign to have the procedures concerned with resuscitation established in the various activities involved. Dr. Henderson has been a very busy man with many other things besides this, and it is our duty to aid him in the matter of propaganda in this direction. Often we see work of great value lapse for years before it comes into use. This very simple thing we should stamp with our approval and do what we can to secure its adoption by the hospitals and by gas companies and various other interested activities.

DR. J. H. WILMS, Cincinnati: A few years ago, I had a case of intestinal obstruction in an infant about 3 months old. It had stopped breathing for sixteen minutes and apparently was dead, so I immediately made a postmortem examination. In feeling under the diaphragm, I felt a faint flutter of the heart and I had the nurse carry out artificial respiration. The child was resuscitated and lived a week. The principle was that after sixteen minutes the child began to breathe normally. When I was an intern, a patient with laudanum poisoning was brought to the hospital. We did artificial respiration on the man for nine hours, in shifts, and the man made a very nice recovery. In experimental work in making intravenous injections with magnesium sulphate, according to Meltzer's method, and later antidoting with calcium chlorid, we stopped the breathing. Artificial respiration was then instituted; the magnesium sulphate had paralyzed the respiration, and when we gave the antidote, calcium chlorid, in time the respiratory centers were restored; but the wide application of artificial respiration is with ether and chloroform paralysis of respiration. Ether and chloroform, like many other poisons, paralyze the respiration by the effects on the respiratory center, and many patients are allowed to die when they could be nicely resuscitated by artificial respiration.

MR. WILLS MACLACHLAN, Toronto: In connection with the whole matter of manual resuscitation, it has been my opportunity to train a great number of men, or to have my assistants train them, in this method. I find that in training these men it is absolutely necessary to teach them one method and one method only. If one attempts to teach them two methods, one is certain to run into trouble. Also, we have found that in teaching the laity it is necessary to be very explicit, for instance, in telling them to put their little finger on the lowest rib, because it can be readily shown that by simply shifting the hands 2 or 3 inches up, or down 2 or 3 inches, one gets a tremendous difference in the ventilation of the lungs. One point that in the hurry I did not emphasize is that this method is just as effective in the resuscitation from drowning, and this point cannot be overemphasized. No doubt, in this country as it is in Canada, the fatalities from drowning exceed the fatalities from any other accidental cause, and the necessity of training the boys and girls in our schools in this simple method of resuscitation is apparent. The other point that I would stress in the training of men is the necessity of having them continually practice the method. In case of an accident, they will lose their heads. It is very difficult to get an exact report of any severe accident from laymen. For that reason, we train them and train them and train them, and make them practice and make them practice, so that when they have lost their heads they do the matter automatically for a few minutes until they can carry on for themselves. In the summing up, so far as electrical shock is concerned, the important

point is to get to work, as soon as one possibly can, carrying out resuscitation wherever one finds the victim and not moving him unnecessarily, because time will be wasted. We have not found it necessary to pry open the jaws; they will usually slacken later on and one can clear them out then. The resuscitation should be carried out in detail, and one should not give up too soon. We have long cases—nine hours was mentioned a moment ago—we have cases of two and a half hours from electrical shock; we have cases of men submerged for from fifteen to twenty minutes, taken out, and in an hour and five minutes resuscitated. Then when the patient is coming along nicely in his breathing, he should be transported, lying down, and put to bed for over night at least. Of course, if badly burned, he may be in the hospital for months. I should like to thank the American Medical Association, in the name of the National Electric Light Association and also the American Gas Association, for the opportunity of presenting this subject at your scientific assemblage.

DR. YANDELL HENDERSON, New Haven, Conn.: I would again confirm fully what Mr. Maclachlan has said. It is essential that we should adhere to one method, and that there should be no divergence from the officially published directions. It is not perhaps of extreme importance technically whether the hands are placed exactly one way or another, but uniformity of directions is of extreme importance in the training of school children, of the police and fire departments, of the men working at the bathing beaches, and so on. As we now have it, the method is the result of a very long series of investigations and of a large amount of practical experience, and I hope, therefore, that the medical profession will stand solidly back of exactly the procedure that the electric light industry has adopted. We must also teach the young physicians on the ambulances and, indeed, the entire medical profession, that in cases of drowning or possible drowning and of electrical shock the victims should not be declared dead and efforts at resuscitation should not be stopped until rigor mortis has set in. I confirm everything Mr. Maclachlan has said on this matter, because patients have been resuscitated, as he has told us, after six or eight hours of work. I hope that one of the results of this meeting and of the publication of these papers in THE JOURNAL will be that the physician called to an accident or the young physician on the ambulance will not hereafter say, "The patient is dead, leave him alone," merely because he is not breathing. It would have been possible to save many lives now lost. As regards the inhalation of carbon dioxid, for asphyxia, alcoholism, etc., it is essential that apparatus be provided in the hospital before the accident occurs. It is true that I know of one case in which an efficient intern carried the patient to the hospital, and then ran to the department of pathology and got a tank of carbon dioxid and to that of surgery and got a tank of oxygen; and, being very energetic, he managed to combine the two with a metabolism spirometer, and saved a life. But in general, one cannot wait until a gassed patient, or a patient of any of the other types I mentioned, is brought into the hospital. One must be prepared previously, with apparatus ready to administer oxygen and carbon dioxid. Furthermore, the apparatus shown at this meeting has been designed so that it can be used for many purposes. It can be used effectively for administering oxygen in pneumonia; for the treatment of failure of respiration in anesthesia; for the treatment of illuminating gas poisoning; for the treatment of the increasing number of people gassed with carbon monoxid from automobiles; and it can be used to maintain respiration in the morphin case, so that artificial respiration will not be necessary. But all these uses require that an inhalator be obtained or constructed beforehand, and that it be ready to treat a case when the patient is brought to the hospital.

Diphtheria Incidence in 1923.—Diphtheria was less prevalent during 1923 than during the last few years. Fifty-nine thousand cases were reported by seventy-seven cities, while the estimated expectancy, which is lower than the average number of cases, was more than 63,000 cases. For 1923 the cities reported 1.97 cases per thousand population, while in 1922, 2.25 cases per thousand were reported for seventy-three cities. —*Pub. Health Rep.* **39**:1667 (July 11) 1924.

ARTIFICIAL RESPIRATION IN ELECTRIC SHOCK AND GAS POISONING

CECIL K. DRINKER M.D.
BOSTON

Those of us who are engaged in such aspects of physiology as bring us in touch with practical problems in respiration are made aware of the fact every day that, not only are persons being overcome in novel and curious ways, but novel and curious remedies are being suggested for their revival. The lectures of Sir Arthur Keith on artificial respiration, delivered in 1909, call attention to the variety of methods used in England since the foundation of the Royal Humane Society in 1774, and these lectures are a commentary on our present day experience. He recounts the vogue of rectal instillations of tobacco smoke as a means of resuscitation after drowning. This method received high endorsement. Testimonials from eminent authorities seemed to prove its success. Similarly, a few weeks ago, I was pestered rather persistently to endorse a method of resuscitation which had as its basis an elaborate system of portable bathtubs in which patients could be rapidly subjected to extreme changes in temperature, it being thought that the shock of such changes must result in benefit.

I hear, too, from my friends in the electric light industry of the efficacy of what is called countershock in resuscitation. By this term is meant the sudden forcible jarring of the patient by pounding him on the soles of his feet with the flat of a hatchet, dropping him on the ground, or giving him some severe sensory stimulus which it has been thought must help in starting respiration. I would not have any one think that I mention such examples as this in order to cast disparagement on them. Each person who makes a suggestion of this kind is actuated by a sincere desire to benefit his fellows, and his suggestion should be dealt with either through the use of existing knowledge or by means of experimental trial.

It is not a new thing, then, to see novel proposals for resuscitation, and, in the face of the multiplicity of such proposals, it is not surprising to see certain ingenious pieces of apparatus placed on the market commercially, and supported with ardent vigor and conviction not only by the manufacturers but also by members of the medical profession.

A few years ago, I was made chairman of a commission to examine methods of resuscitation in gas poisoning, and, as this commission closed its work after two years' profitable activity, it was also called on to pass on the general regulations for resuscitation issued by the National Electric Light Association. I had occasion, during the period of the work of the commission, to examine the field problems in resuscitation which must be met. I was appalled at the amount of gas poisoning with which one must deal in a large city. While the great fraction of this poisoning is suicidal, the gas industry cannot and does not evade the fact that it is the cause of many grave accidents, and I can bear testimony to the care and eagerness with which the gas industry has endeavored to meet its responsibility to the public in this matter. Dr. Cannon and I directed an analysis of gas poisoning cases that have occurred in certain of our large cities. We found that gassed individuals were either dead when discovered or were apt to be breathing either rapidly or feebly, depending on the degree of poisoning that existed.

Few or none were discovered whose circulation was reasonably intact and whose respiration had ceased or had become so profoundly enfeebled as to be functionally negligible. It was apparent, both from the figures supplied by gas companies and in the study of hospital case and police cases, that first-aid crews in gas poisoning, while they required knowledge of artificial respiration to be applied in certain very rare instances, needed a serviceable method for getting oxygen into the lungs and so freeing the system from carbon monoxid with the greatest possible rapidity. In order to accomplish such an end, two courses were open: The patient's breathing might be stimulated so that he would himself take oxygen from an appropriate reservoir; or oxygen might be delivered to him by some sort of pumping device. Drs. Henderson and Haggard, the commission felt, and experience has amply justified this feeling, provided the logical and best method of resuscitation in gassing that has ever been available, by falling into accord with the first alternative and using the 5 per cent. carbon dioxid and 95 per cent. oxygen mixture.

It was my province to test out the most prominent of the devices then on the market for pumping air or oxygen into patients. Two machines, the lungmotor and the pulmotor, received extensive attention at our hands. Both these devices deliver air or any gas mixture desired through a mask, and it is the general idea that this air reaches the patient's aveoli. It is removed by suction. Inspiration is thus a positive blast; expiration is a somewhat forcible suck. Both machines are arranged so that it seems impossible to do patients much damage by overinflation, and we were confident that this source of accident was negligible. We found, on animals and on ourselves, that by careful adjustment of the mask, and discriminating use of the lungmotor, we could ventilate quite successfully with it, but we believe that adequate and continuous ventilation by the use of the lungmotor or the hand-controlled pulmotor requires the presence of some one expert on respiratory matters. The automatic pulmotor, we found, delivered oxygen and air adequately to the lungs only under extraordinarily favorable conditions, and we are sure that this is a device on which no certain reliance can be placed. It was therefore the general opinion of the commission that devices now available for driving air or oxygen into the lungs by positive pressure were inadequate and unphysiologic.

I trust, and I have reason to feel sure, that the wide publicity given the subject of artificial respiration during the war, and by such organizations as the American Red Cross, the American Gas Association, and now the American Medical Association, will result in teaching individuals and communities that, so far as gas poisoning is concerned, adequate rescue work must come through training in the Schäfer method of artificial respiration, supplemented, wherever possible, by the oxygen-carbon dioxid inhalation.

In regard to resuscitation from electric shock, the problem is somewhat more simple. Death ensues from cessation of respiration and true asphyxia, the circulation remaining for some moments after respiration ceases; or occasionlly respiration continues and the heart muscle fibrillates. This fibrillation is generalized and is fatal. There may be an indefinite number of combinations of these two conditions. When, however, ventricular fibrillation takes place, it is even doubtful whether, in man, it ever stops. The circumstances surrounding electric accidents make it possible to reach many patients who fall into the first class. These require air, and require air immediately. There is no time to obtain apparatus of any sort, nor is any apparatus called for. The electric light industry and the electric industry in general cannot go too far in educating employees and the public in the Schäfer method of artificial respiration and in placing entire reliance on it. Occasionally, individuals appear who require repeated applications of artificial respiration, voluntary breathing starting and stopping most alarmingly. In such persons, it is possible that the oxygen carbon dioxid inhalation may be beneficial. It has, however, been shown that the prone pressure method of artificial respiration will ventilate sufficiently to sustain life over long periods, and there seems no justification for the idea that mechanical devices are called for in such cases.

CONCLUSION

We witness today the presentation to the public of many strange and some very ingenious suggestions for resuscitation. When we give all these methods a competent analysis, we are reduced to the selection of the prone pressure method of resuscitation as our great reliance for immediate emergency, and we turn to the oxygen-carbon dioxid inhalation method devised by Henderson and Haggard as the physiologic antidote for carbon monoxid asphyxia, and through simple inhalation apparatus practically allow the patient to administer this mixture to himself. It is conceivable that physiologists may some day devise a positive pressure artificial respiration apparatus which, even in comparatively unskilled hands, can be relied on to ventilate the lungs. Our examination of such devices as are now on the market has failed to disclose any that prove to be of value.

Clinical Notes, Suggestions, and New Instruments

PARINAUD'S INFECTIOUS CONJUNCTIVITIS

E. A. WALDECK, M.D., MILWAUKEE

Since 1888, when Parinaud first described this form of conjunctivitis, very few instances have been reported. It was my good fortune to study such a case.

REPORT OF CASE

An American school girl, aged 13 years, came to the office, Nov. 22, 1923, with a swelling of the left upper eyelid and the left side of the face which had been present for the past three weeks. The condition started about four weeks previously as a "cold in the left eye," characterized by redness of the conjunctiva, tearing, and the adhesion of the lids by a purulent discharge in the morning. In a few days, this acute inflammatory condition of the left eye subsided, but the upper lid began to swell, and continued to do so until the ptosis interfered with vision. One week after the swelling in the lid began, a swelling started in the left preauricular region, which finally included the entire left side of the face and the neck. The right eye never showed any symptoms, and the general health was excellent and unassociated with any constitutional disturbances.

The family and personal histories were apparently negative. No tuberculosis, cardiorenal diseases or acute infections were evident.

The home sanitation was good, except for the freedom allowed to three pet cats. One of these cats, Dec. 6, 1923, developed sore eyes and swollen glands of the neck. This cat was taken to the pathologic laboratory for observation.

The ocular examination, when the patient first visited the office, showed the right eye normal in all respects. The left

eye had marked ptosis of the upper lid due to an inflammatory swelling and thickening of the lid. The bulbar conjunctiva was slightly injected and chemotic. The chemosis extended to the limbus, leaving the cornea clear and free from inflammation. When the upper lid was everted, the palpebral conjunctiva showed many yellowish red polypoid elevations on a thickened, injected, nonulcerative surface, accompanied by a mucofibrinous discharge. At the fornix, the elevations were larger and pedunculated. The palpebral conjunctiva of the lower lid showed merely a simple conjunctivitis free from elevations. In both eyes, the lacrimal apparatus was normal and the pupils were equal and regular, with prompt reaction to light and convergence and vision 20/20. The left preauricular, parotid, anterior superior cervical and submaxillary glands were enlarged, indurated and painful on deep pressure. No fluctuation was ever evident.

The laboratory report on the smears revealed no bacteria. Cultures showed no growth. An excised follicle taken from one of the pendulous follicles in the fornix showed merely a simple follicular hyperplasia. The leptothrix of Verhoeff, which has been found in many of the cases reported, could not be demonstrated. The cat, which was under observation, recovered in a few days from the inflammatory condition in the eyes, and though repeated eye smears and cultures were taken, no definite bacterial cause could be found.

Our method of treatment by daily application of ultraviolet rays, the short quartz rod in direct contact to the follicles, gave gratifying results in that the clinical course of this disease terminated in a much shorter time than usually ascribed to this condition. The follicles were exposed about twenty seconds to each area. The first treatment was given, November 23, and the follicles treated shrank and never returned to their original size. By December 15, the follicles were gone, and only a slight roughness and thickening of the conjunctiva remained. By December 20, the thickening of the lid and the swelling of the anterior cervical glands had disappeared. The preauricular and parotid glandular enlargement was not evident after January 15. When the patient came to the office one month later, February 15, examination showed no ocular pathologic or adenopathic condition. The entire clinical course of this case was about two months, which was much shorter than most cases previously reported.

204 Grand Avenue.

THE PRESENCE OF HYMENOLEPIS NANA IN PORTO RICO *

ROLLA B. HILL, M.D., AND AUGUSTIN SANCHEZ, M.D.,
SAN JUAN, PORTO RICO

Hymenolepis nana has been reported so often in the United States that it is now regarded as one of the commonest tapeworms infesting man. It has not, as far as we have been able to ascertain, been reported before from Porto Rico. The cases here presented should therefore be of some interest as further indicating the cosmopolitan distribution of this parasite.

In examining the forty-seven inmates of the boys' orphan home in Hatillo for hookworms, the eggs of *Hymenolepis nana* were discovered in the stools of three of the boys. This home is managed entirely by local people, and admits boys from 6 to 12 years of age. One of the boys had been in the home for three years, the other two for two years. None of the boys or the director have ever been off the island. Their only contact with outside people is in the local schools.

These three boys were from 10 to 12 years of age. They had all been examined and treated one year before for hookworms without cestode eggs having been found. They had no symptoms referable to tapeworm or hookworm infestation. As afterward proved, they were very lightly infested with the latter parasite.

Treatment for hookworm infestation was given to two of the boys. It consisted of one treatment of 1.5 c.c. of carbon tetrachlorid, followed in a week by a treatment with 1 c.c. of oil of chenopodium. The forty-eight hour stools from each treatment were washed and examined, but no tapeworms were found, although a few hookworms were recovered. It is possible that some tapeworm segments were overlooked, since they are very difficult to distinguish. Subsequent microscopic examination, however, still showed the eggs of the cestode parasite.

Oleoresin of aspidium was then given, 1 gm. in divided dose, preceded for twenty-four hours by a milk diet, and followed in two hours by a purge of magnesium sulphate. All three boys were treated. The resulting stools for twenty-four hours were saved, washed, strained and examined. Owing to their small size, great transparency and fragility, it is probable that some worms or segments were missed, although all care was used in the search for them.

From one boy, we recovered segments from approximately 100 worms, and from the other two, four worms. In many cases, the small heads were missing. These cestodes corresponded in all particulars with the description of *Hymenolepis nana* in various textbooks, and with our knowledge of them from specimens seen elsewhere.

While this parasite has not been reported before from Porto Rico, yet it seems clear that it has gained a foothold in the island, and will probably be found with relative frequency hereafter.

* From the Bureau of Uncinariasis, Department of Health.

TREATMENT OF PRURITUS ANI, VULVAE AND SCROTI

M. P. MOORER, M.D., ASHEVILLE, N. C.

Under thorough infiltration of the skin and subcutaneous tissue extending one-half inch beyond the area affected, with 0.5 per cent. quinin and urea hydrochlorid solution, itching is at once arrested; excoriations rapidly heal, and within a few days the skin resumes its normal smoothness and luster. Anesthesia, however, persists for from several days to as many weeks, and, at the expiration of this period, a second and sometimes a third infiltration is or may be required. It has not been necessary to employ a fourth infiltration in any case thus far treated, as the causative factor is searched for, and, if found, eliminated during the days of freedom from itching produced by this simple measure. Occasionally, one injection suffices, and the patient remains away for months; but he finally returns to have skin tabs removed or other operative rectal procedure which he was told in the first instance would be needed to insure permanent relief, attended to.

The technic consists in rendering the part clean with water, a good soap and a soft sponge; application of a solution of mercurochrome-220 soluble as an antiseptic, and the injection of a small area with 1 per cent. procain as a starter. The remainder of the diseased skin is then infiltrated, after which the underlying subcutaneous structure is ballooned out with quinin and urea hydrochlorid solution until the patient complains on resuming a chair that he is "sitting on a cushion." The precautions to be observed are as follows:

1. A decided neurotic element exists in all pruritus cases; therefore, it is wise to administer hypodermically one-fourth grain (0.01 gm.) of morphin before beginning this treatment, for the prevention of shock; otherwise, profound depression, resembling greatly the first few hours succeeding a grave surgical operation, is likely to follow.

2. Not more than 10 c.c. of 1 per cent. procain should be used, but quinin and urea hydrochlorid solution from 0.25 to 0.5 per cent. strength may be used in any necessary quantity, as much as 200 or 300 c.c. (quinin and urea hydrochlorid solution in greater than 0.5 strength may produce a slough or an unpleasant induration).

Results in a number of cases have been as good as with a Ball or Lynch operation, and infinitely better than with the cautery.

The pressure on the terminal nerves produced by the forcible injection of fluid in large amount brings about a temporary paralysis equal in duration to that produced by severance of their filaments with a knife, and to the mind of the average patient is much more acceptable.

194 Victoria Road.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

MEDICINAL DYES

The dyes which have been introduced in medicine, for the most part in the last decade, are practically all organic synthetics. Roughly they may be divided into five classes: (1) the azo dyes, of which scarlet red medicinal and scarlet red sulphonate are described in New and Nonofficial Remedies (these have been in use for considerable time); (2) the acridine dyes, such as acriflavine, neutral acriflavine and proflavine; (3) the fluoresceine dyes, usually combined with the metal mercury, such as mercurochrome-220 soluble and flumerin; (4) the triphenylmethane or rosaniline series, which comprise a large list of substances used in the industries, extensively in laboratory practice and more recently in medicine, such as gentian violet, crystal violet, methyl violet and fuchsin; (5) miscellaneous dyes, such as methylene blue, phenolsulphonephthalein and tetrabromphenolphthalein. Much confusion has existed concerning the composition of dyes, various manufacturers of commercial dyestuffs making similar dyes of varying composition both qualitatively and quantitatively; usually the commercial dye contains a diluent, such as dextrin or salts, and is judged by tinctorial power. In order to obtain comparable results when employed clinically, the dyes should be of constant composition, preferably without diluent.

Triphenylmethane (Rosaniline) Dyes

Of the derivatives of triphenylmethane and its homologue tolyldiphenylmethane, the most interesting medicinally are those which result from the introduction of amino groups forming pararosaniline (triaminotriphenylcarbinol $(NH_2\text{-}C_6H_4)_3COH$) and rosaniline (triaminodiphenyltolylcarbinol $(NH_2C_6H_4)_2(CH_3NH_2C_6H_3).COH$). On treating rosaniline with hydrochloric acid, the hydroxyl of the carbinol group is split off, permitting the formation of a quinoid group; thus is formed a typical dye known as fuchsin, $NH_2C_6H_4.CH_2.NH_2C_6H_3.C:C_6H_4:NH_2.Cl$. The red color of pararosaniline chloride or fuchsin is changed to violet by the entrance of a methyl group in the amino groups, the intensity of the violet color increasing with an increasing number of methyl groups. Thus, there is the closely related gentian violet, crystal violet and methyl violet. Gentian violet is a mixture of pentamethylpararosaniline chloride and hexamethylpararosaniline chloride; by some it is defined as a mixture of methyl violet and crystal violet. Crystal violet is a relatively pure form of hexamethylpararosaniline chloride; methyl violet is considered to contain mostly pentamethylpararosaniline chloride with some of the hexaderivative and probably some tetraderivative also. Hence, one definition of gentian violet is practically the same as the other. It seems likely that in therapeutics it will be found that there is little difference between the penta and hexa derivatives and the mixtures of the two, so that the one most easily obtained in pure form (crystal violet) will be the one most used. The material which has been used by the workers so far, however, has been gentian violet.

Action and Uses.—The use of gentian violet in therapeutics has recently been proposed by Churchman, who found that solutions of the dye had a selective action on certain bacteria and that the majority of gram-negative organisms survived exposure to gentian violet solutions in strengths far in excess of that required to kill gram-positive organisms; in fact, the action of the dye is sufficiently selective, so that often a "strain within a species" is not affected. Churchman's work, however, was done largely with a product containing dextrin as a diluent. Gentian violet is stated to possess properties of great penetration; to be bactericidal also bacteriostatic in vivo toward the selective organisms. Its chief application has been in the treatment of affections of the pleural cavity and of the joints, particularly in empyema and arthritis—affections in which staphylococci, *B. pyocyaneus* and *B. diphtheriae* are the causative agents. Young and Hill have also proposed the use of gentian violet intravenously in staphylococcus septicemia, chronic cystitis (from staphylococcus), osteomyelitis (with staphylococcus present). Intravenous injection of the dye in doses of 5 Mg. per kilogram of body weight causes marked cyanosis, which persists for a few hours after injection, owing to the intense color of the dye. In feeble patients, cardiac stimulants should be given. Churchman also has found that acid fuchsin (the acid sodium salt of fuchsin disulphonic and trisulphonic acids) is in some respects the opposite of that of gentian violet in selective power, a stained culture of *B. prodigiosus* being killed by the acid fuchsin, while the gram-positive *B. anthracis* would be unaffected. The selective action of acid fuchsin, however, is clearly brought out only when the organisms are exposed to the dye with slight elevation of temperature (about 50 C.). Acid fuchsin is incompatible with gentian violet, and the compatibility of all mixtures of dyes should be determined before any combination is prepared. Churchman claims, however, that acriflavine possesses much the same selectivity as acid fuchsin, so he has proposed the use of a mixture of these two dyes. The effectiveness of such a solution has not yet been established clinically. None of the rosaniline dyes are strong bactericides.

GENTIAN VIOLET MEDICINAL.—A mixture of pentamethylpararosaniline and hexamethylpararosaniline chlorides.

Actions and Uses.—See preceding article.

Dosage.—For direct application, a solution of from 1:500 to 1:1,000 may be employed; for instillation, a 1:10,000 solution. For intravenous use, Young and Hill recommend 5 Mg. per kilogram of body weight, injected in 0.5 per cent. dilution.

Gentian violet occurs as a dark green ("bronze") powder or greenish glistening pieces having a metallic luster. It is soluble in alcohol or chloroform; insoluble in ether. Its solution in alcohol or chloroform has a deeper hue than the same strength aqueous solution. Concentrated sulphuric acid dissolves methyl violet with an orange to brownish-red color; on slowly diluting this solution in distilled water, the solution assumes a brown, then green and finally a blue color.

Add, drop by drop, tannic acid solution to a solution of gentian violet (1:500): A deep blue precipitate forms (basic color). To 5 Cc. of an aqueous solution of gentian violet, add a few drops of hydrochloric acid and about 0.5 Gm. of zinc dust; rapid decolorization ensues. Place a few drops of the decolorized solution near a few drops of ammonia water on filter paper; the zone of contact assumes a blue color.

Add hydrochloric acid slowly, drop by drop, with agitation to an aqueous solution of the dye (1:500); the violet color changes gradually to bluish-green, green and finally to brownish yellow, the solution remaining clear; now dilute gradually the solution, the color changes in reverse order as the hydrogen-ion concentration is increased.

Dissolve 1 Gm. of the dye in boiling alcohol; cool; filter through gooch filter; wash residue with alcohol until washings cease to be colored violet and dry at 100 C. The weight of insoluble material corresponds to not more than 1 per cent. (*dextrin*).

When tested for arsenic according to the U. S. Pharmacopeia, IX, the product should meet requirements for the test for arsenic (Part II, Test No. 1).

Incinerate 1 Gm. of gentian violet; not more than 0.01 Gm. of ash remains.

Gentian Violet Improved Medicinal.—A brand of gentian violet medicinal-N. N. R.

Manufactured by The Coleman and Bell Company, Norwood, Ohio. No U. S. patent or trademark.

Gentian Violet Medicinal-"National."—A brand of gentian violet medicinal-N. N. R.

Manufactured by The National Aniline and Chemical Company, New York. No U. S. patent or trademark.

INSULIN-STEARNS (See THE JOURNAL, June 14, 1924, p. 1937).

The following dosage form has been accepted:

Insulin-Stearns Quadruple Strength: 5 Cc. vials containing 40 units in each cubic centimeter.

SULPHARSPHENAMINE-SQUIBB (See New and Nonofficial Remedies, 1924, p. 58).

The following dosage forms have been accepted:

Sulpharsphenamine-Squibb, 1 Gm. Ampules.
Sulpharsphenamine-Squibb, 3 Gm. Ampules.

DIPHTHERIA TOXIN-ANTITOXIN MIXTURE (See New and Nonofficial Remedies, 1924, p. 298).

E. R. Squibb and Sons, New York.

Diphtheria Toxin-Antitoxin Mixture (New Formula)-Squibb.—(See New and Nonofficial Remedies, 1924, p. 299). Also marketed in packages of thirty 1 Cc. ampules.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1924, p. 304).

E. R. Squibb and Sons, New York.

Antistreptococcic Serum-Squibb (See New and Nonofficial Remedies, 1924, p. 305). Also marketed in packages containing one 10 Cc. syringe; in packages containing one 50 Cc. vial.

Antistreptococcic Serum Rheumatic-Squibb (See New and Nonofficial Remedies, 1924, p. 305). Also marketed in packages of one 20 Cc. vial; in packages of one 50 Cc. vial.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Five dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, SEPTEMBER 6, 1924

THE FATE OF MORPHIN IN THE BODY

Morphin was discovered by Sertürner of Hanover in 1805; and the first demonstration that this alkaloid, taken into the body, may reappear in the urine was made, in 1827, by Barnel. In view of this long acquaintance with a drug of such outstanding importance, it is indeed surprising that so little has been accurately ascertained regarding the rate of its elimination from the organism. It has been argued that, as cumulation does not occur when morphin is taken several times daily by habitués, we must suppose that they, at least, are capable of destroying or excreting the drug fairly rapidly.[1] One might expect that the essential facts could have been established long ago by certain obviously indicated procedures. The morphin introduced into the body should be present in the excreta or the tissues, unless it has been destroyed. Biochemical analysis ought to give the answer. Yet there has been considerable difference of opinion, not alone about the residual distribution of the alkaloid when it is taken into the body, but also respecting the paths of elimination of the unchanged drug. Some investigators have found it only in the feces—an observation that seems quite in harmony with the demonstrated excretion of morphin into the stomach after its subcutaneous administration. Other workers, in turn, have not failed to detect the substance in the urine.

One drawback to securing more consistent information has resided in the imperfections of the analytic methods. Each time that they have been improved, a better understanding of the problems involved seems to have been secured. Recently, for example, Takayanagi,[2] working with an improved technic in the pharmacologic institute at the University of Heidelberg, has observed that the extent of excretion of morphin in the urine may, under certain circumstances, greatly surpass the elimination through the alimentary tract with the feces. When a single dose of the drug is given, the urinary excretion is delayed and slow. In cases in which it has been previously administered, the urinary elimination, following a subsequent dose, may be accelerated. When tolerance to the drug has been established, the excretion through the kidney is lessened, presumably owing to a greater destruction of the substance in the body; at any rate, it does not go preponderatingly into the feces. It is not unlikely that the constipating action of morphin leads to reabsorption of such portions as may have been excreted into the bowel; so that, in the long run, they are destroyed in good measure rather than discharged.

Such considerations harmonize with Takayanagi's[3] further finding that less morphin can be recovered from habituated than from nonhabituated animals. But increased destruction will not account for the lack of toxic symptoms in the habitués. The latter often fail to react unfavorably, even when their bodies still contain more morphin than an unaccustomed individual could possibly tolerate. We cannot easily escape the conclusion, therefore, that in some way an immunity of some sort has been developed. That the habituated organism responds differently from the normal, in respect to certain metabolic changes, has been demonstrated in man by Schoen,[4] in the medical clinic at Würzburg. Morphin is known to depress the basal metabolism, the decrement amounting to 25 per cent. in some cases, soon after an injection. After repeated doses, this depression of metabolism no longer takes place. The acidosis that characterizes the effect of an initial dose of morphin also is missed in the case of persons that have become partially accustomed to the alkaloid. How these failures to respond in the usual way come about in the tolerant subject has not been ascertained.

ADEQUATE VERSUS OPTIMAL NUTRITION

Less than two decades have elapsed since Hopkins first announced that mixtures of proteins, fats, carbohydrates and salts, however well selected and proportioned, are not adequate for the support of normal nutrition, and it is only about a dozen years since this observation was put on a firm basis by the nearly simultaneous publications of experimental evidence by Hopkins, Osborne and Mendel, and McCollum and Davis. Few scientific discoveries have met such prompt and widespread recognition and application. Students of the chemistry of food and nutrition were quick to recognize the importance of the fact that normal nutrition requires substances which were previously unknown and which are irregularly distributed among even natural food materials, and to institute reexamination of supposedly familiar foods to determine which

1. Hatcher, R. A., and Wilbert, M. I.: Pharmacology of Useful Drugs, Chicago, American Medical Association, p. 62.
2. Takayanagi, T.: Ueber das Schicksal des Morphins im Tierkörper, I, Ueber die Ausscheidung des Morphins beim Warmblüter, Arch. f. exper. Path. u. Pharmakol. **102**: 176 (May) 1924.
3. Takayanagi, T.: Ueber das Schicksal des Morphins im Tierkörper, II, Ueber die Zerstörung des Morphins im Körper gewöhnter und ungewöhnter Ratten, Arch. f. exper. Path. u. Pharmakol. **102**: 183 (May) 1924.
4. Schoen, R.: Zur Kenntnis der Morphinwirkung beim Menschen, II, Die Veränderung des Grundumsatzes und der Einfluss mässiger Gewöhnung auf Grundumsatz, Blutreaktion und Atmung, Arch. f. exper. Path. u. Pharmakol. **102**: 205 (May) 1924.

are and which are not, either singly or in combination, adequate for the nourishment of laboratory animals, especially of the omnivorous rat, and presumably therefore of man.

Thus, it has become well known that the great group of food materials composed of cereal and other grains and their mill products, while constituting the largest and most economical source of food energy and supplying also important amounts of protein of fair nutritive efficiency, are not nutritionally adequate alone, because of an insufficient content of calcium and of fat-soluble vitamin. In most studies of the "dietary deficiencies" of familiar articles or combinations of food, as well as of so-called synthetic dietaries consisting of mixtures of purified nutrients, there has been a tendency to accept the attainment of adequate nutrition as a stopping point in this line of experimental inquiry, as if, having what is nutritionally adequate, there were nothing more to be sought. The insufficiency of this view can now be recognized clearly from the vantage point of present knowledge without in any sense minimizing the importance of the pioneer work of the last twelve years through which our newer knowledge of nutrition has been gained. In fact, several of the workers in this field have themselves emphasized from time to time the fact that standards of adequacy in nutrition are subject to revision and have tended to become more rigorous as feeding experiments of longer duration have come to be employed in nutrition investigations. Osborne and Mendel, for instance, quite early in their series of publications on feeding experiments with purified foodstuffs, called attention to cases in which, with yeast as a sole source of water-soluble vitamin in the nutrition of rats, adequate growth to full adult size was secured but normal reproduction did not follow; and McCollum has pointed out that diets near the minimal requirement may induce adequate nutrition, as gaged by successful reproduction, but may fail to prevent the early onset of signs of senility.

Further evidence that a well planned dietary may be the direct cause of superior, as distinguished from merely adequate, nutrition appears in a paper just published from the laboratory of food chemistry of Columbia University.[1] In this investigation, starting with well standardized laboratory animals (rats) on a diet which was shown to be adequate in that it supported growth, reproduction and successful suckling of the young for generation after generation, it was found that an increase in the proportion of milk in this already adequate diet resulted in a number of evidences of improved nutrition. Growth was more rapid, particularly as measured by the gain in weight during the period following weaning. Growth was more efficient during the same period, as shown by greater gain in weight per thousand calories of food consumed. The average size at all ages was somewhat greater. There was earlier maturity, as shown by the age of the female at the birth of her first young. Reproductive life was of longer duration, old age being deferred in the same individuals in which earlier maturity had been induced. There was greater success in the rearing of young, as shown by an increase both in the numbers and in the percentage of young reared, and by a decrease in the percentage of females failing to bear and rear young. There was better growth of the young during the suckling period, as shown by a larger average weight at the uniform weaning age adopted.

Each of these findings is supported by numerous and carefully controlled experiments. Sherman and Campbell conclude that the better of the two diets tested in these experiments is probably susceptible of still further improvement, and that evidently there is not only a line to be drawn but also a wide zone to be explored between adequate and optimal nutrition.

1. Sherman, H. C., and Campbell, H. L.: Growth and Reproduction upon Simplified Food Supply, IV, Improvement in Nutrition Resulting from an Increased Proportion of Milk in the Diet, J. Biol. Chem. **60**: 5 (May) 1924.

AEROPLANES IN MEDICAL SERVICE

Amid the rapid changes that spell the progress of our day, we tend to lose enthusiasm for the novelties that are invading modern life in astonishingly quick succession. Civilized man has become blasé. He has come to expect new discoveries and novel inventions at every turn; and, surfeited by their actual production, he reacts with surprise or gratitude only when some exceptional contribution is made. He is prone to forget the dramatic chapters of medicine that have included the evolution of anesthesia and antisepsis with the consequent development of transfusion and reconstructive surgery, almost within the memory of the living. And the routine care of the sick is today taken for granted; it has become a part of everyday experience that scarcely ever calls for special commendation.

Contrast often serves to awaken us to a more adequate realization of the transformations that have come into the life of our generation. It has been estimated [1] that at one period of the battle of Waterloo, 10,000 men were absent, having gone to the rear with British wounded. No regularly trained men were provided for the removal of these unfortunates, or to assist the surgeons either on the field or in the hospitals. Wounded were removed by the bandsmen or by their comrades to the first line of surgical assistance, and afterward transferred to field hospitals or general hospitals in return carts of the commissariat, in hired country carts or in spring wagons. The attendants in the hospitals were not trained men, but were detailed from the regiments as occasion rose.

What a change is represented by the introduction of new devices, such as the aerial ambulance transport. The aeroplane has been employed for carrying the sick

1. Howell, H. A. L.: The British Arrangements During the Waterloo Campaign, Proc. Roy. Soc. Med. (Sec. History of Med.) **17**: 39 (May) 1924.

and wounded in war since 1915, the French being foremost in the development of its possibilities. Already one may read of the possible starting of an aerial ambulance convoy, with an establishment of machines and personnel, on the lines of the motor ambulance convoys of present day armies. Special types of aircraft—ambulance machines—have already been constructed. Air Commodore Munro [2] of the British Air Forces feels certain that they will find extended use in future warfare, particularly in a war of movement, whereby serious casualties can be removed rapidly far from the field. It might become possible to place communication medical units farther back, and to have direct communication between them and the base hospitals. Munro pictures aeroplanes carrying up troops or stores, and used on the return journey to evacuate the sick. On the naval side, seaplanes may convey the sick from men-of-war to land.

This is not merely a story from the realms of romance; it will doubtless soon represent an actuality.[3] What may we expect, then, from the aeroplane ambulance in the service of man during peace?

THE SUPRARENALS IN HYPOGLYCEMIA

Many of the functions of the body have been found, on critical analysis, to represent the outcome of an interplay of antagonistic or of mutually compensating actions, resulting in what is commonly termed a condition of equilibrium. When acid factors develop in undue degree there are arrangements, including the supply of neutralizing bases, for combating them. Oxidations and reductions interchange in the metabolism. Depletion of some essential, such as oxygen, leads automatically to activities that tend to restore the supply and prevent prolonged shortage. The upshot of all such correlations is expressed in a sort of physiologic "normalcy," exemplified most perfectly in the almost unvarying composition of the blood, despite the drafts and deposits to which it is continually subjected.

So prompt and perfect are many of these adjustments that their mechanism may not readily be discerned, unless a severe upset of the physiologic functions occurs. That is what happens, apparently, in severe diabetes. Under ordinary conditions, the mobilization and the destruction of sugar proceed in such perfect accord that, aside from transitory variations of lesser degree, the concentration of glucose in the circulating blood remains unvaried from day to day. When the factors facilitating tissue utilization of sugar, notably the pancreatic hormone represented by insulin, fail, the liberation of carbohydrate may continue uncompensated. Hyperglycemia and consequent glycosuria become conspicuous. Insulin combats this. When, however, too much is available, the sugar disappears to such a degree that another extreme is brought about; namely, hypoglycemia.

It is a remarkable fact, just becoming realized, that the symptoms of overdosage with insulin—which means depletion of immediately available carbohydrate, since it can be promptly relieved by sugar—are characteristic of special activity of the sympathetic nervous system. The hypoglycemic reactions occurring when an excessive dose of insulin is given include pallor, rapid pulse, dilatation of the pupils and profuse sweating, which are indications of discharge of sympathetic impulses. Cannon and his collaborators, at the Medical School of Harvard University, have demonstrated that in animals with a denervated heart, acceleration of the beat is indicative of suprarenal secretion. They [1] now find that, as the glycemic concentration falls after injection of insulin, it reaches a critical point at which the rate of the denervated heart begins to be accelerated; and, as the sugar percentage continues to fall, the heart rate continues to rise until a maximum is reached. Discharge of epinephrin into the circulation is, however, followed by mobilization of sugar from its reserves; consequently, if not too much insulin has been given, the increased rate of the denervated heart may be followed by an increase of the glycemic percentage and an attendant fall in heart rate.

Cannon has pointed out that the mechanism protecting the body from dangerous hypoglycemia probably operates in two stages—a primary stage, in which sympathetic activity with suprarenal secretion occurs and mobilizes sugar from the liver; and, if this proves to be inadequate, a secondary stage, in which the activities of the first stage are intensified and augmented in convulsive seizures. The significance of the symptoms of sympathetic manifestations in overdosage with insulin thus becomes apparent. The mechanism, as Cannon expresses it, acts like many others, already known, that assure stability of the organism. When the equilibrium, which normally indicates a concentration of sugar in the blood sufficient to supply needy tissues, is disturbed by serious lessening of the concentration, this compensatory mechanism is set in action to restore the equilibrium. Sugar is set free from the reserves. If the largest reserve station, the liver with its glycogen, fails, or if the agency reducing the sugar content of the blood is too potent, as when excessive doses of insulin are given, the mechanism is overwhelmed and the result is disastrous to the organism—convulsions and coma are followed by death. From such consequences of an inadequate sugar supply to the tissues, the organism is protected by the combined activity of the sympathetic system and suprarenal secretion. The experiments of the Harvard physiologists have thus furnished another example of remarkable automatic adjustment in the body.

2. Munro, D.: The Use of the Aeroplane in the Medical Services in War, Proc. Roy. Soc. Med. (War Section) **17**:7 (Feb.) 1924.

3. Evacuation of Sick and Wounded by Aeroplane, Belgium Letter, this issue, p. 778.

1. Cannon, W. B.; McIver, M. A., and Bliss, S. W.: Studies on the Conditions of Activity in Endocrine Glands, XIII, A Sympathetic and Adrenal Mechanism for Mobilizing Sugar in Hypoglycemia, Am. J. Physiol. **69**: 46 (June) 1924.

Current Comment

THE LOCOMOTION OF THE LYMPHOCYTES

Ever since their functions were first more clearly ascertained, a peculiar glamour has become attached to certain types of leukocytes. The phagocytic cells of the blood have been described with little short of poetic fancy, now in their rôle as scavengers of the body, now playing the part of an army of defense against some bacterial invader. Movement, including locomotion, has been pointed out as a striking characteristic, exhibiting itself as the polymorphonuclear leukocytes migrate through the vessel walls in answer to some stimulus, chemotactic or what-not, in nature. No story of immunity is complete without reference to the bodily defenses that Metchnikoff so vigorously portrayed. No blood count of today fails to put these mobile leukocytes into a special group according to which the variations in their relative numbers bear witness to the seriousness of their special tasks. Perhaps, however, they may presently be shorn of some of the exclusive glory under which they have been parading; for we have recently been reminded that so far as the capacity to move is concerned, the human lymphocytes are not lacking merit. Occasional power of locomotion has been conceded to them; but McCutcheon[1] has now demonstrated that the prevailing opinion that lymphocytes are capable of only extremely slow motion is erroneous. He therefore regards it as likely that these cells are able to move actively through the tissues. Such a conclusion, McCutcheon adds, lends support to the view that lymphocytes reach inflammatory areas through actual active migration, though it does not disprove the possibilities of their being also passively carried by lymph currents or being formed by proliferation of cells already in the tissues. Are we approaching a contest for laurels among the blood cells?

EVIDENCE THAT INSULIN DOES NOT PROMOTE FERMENTATION

It has been characteristic of the development of our knowledge of various hormones that information regarding what they can accomplish has often long preceded a rational understanding of how they really act in the organism. This is conspicuously true, for example, of epinephrin, thyroxin and insulin. The last of these, the pancreatic hormone, being the latest to engage the attention of scientists, is at present still the subject of lively discussion from many directions. Broadly speaking, insulin facilitates the utilization of sugar in the metabolism: it renders glucose physiologically available in persons that lack the capacity in greater or lesser degree to benefit by processes in which the carbohydrate normally plays a significant part. To express the function of insulin in this way is, however, far from "explaining" the details of its biochemical performance. Does it liberate something that directly facilitates carbohydrate breakdown? Does it merely promote the normal cellular oxidative changes as a stimulating drug might? Or does it somehow render the sugar molecule more susceptible to chemical disintegration? The last hypothesis has been particularly popular. Many students of the metabolism of the carbohydrates have assumed an analogy between the behavior of sugar in fermentation and its physiologic transformations in the living body. This lends interest to a recent study[1] of the influence of insulin on the rate of fermentation of glucose by yeast. The demonstrated failure to alter the rate of destruction of the sugar in this way may be regarded as evidence in favor of the view that the action of insulin is not on the glucose molecule itself. At any rate, one would expect that if the sugar was altered by contact with the hormone, some change in the rate of fermentation would manifest itself. The burden of proof that insulin in some way alters the configuration or structure of the glucose molecule is gradually being shifted to the shoulders of those who have believed in this explanation of a remarkable biochemical property.

HEAT PRODUCTION THROUGH SUPRARENAL SECRETION

Although metabolism is by no means to be identified solely with oxidation, there can be no doubt that oxidative processes are responsible for heat production in the body. Without knowledge of the mechanisms of heat loss from the organism, which are becoming fairly well understood, no satisfactory theory of temperature regulation in the body can be evolved. It is equally important, however, to become thoroughly familiar with the principles of thermogenesis that apply; and it is in connection with these that current uncertainty and ignorance must still be admitted. The need of heat arises from exposure to cold. The latter may be combated by a conservation of heat that might ordinarily be eliminated as "waste" from the organism. Only minor emergencies of lowered temperature can be met in this manner. When the conservation process no longer suffices, the body may shiver; that is, muscular activity, with its by-product of heat, is initiated. A further possibility of heat production lies in direct chemical augmentation of metabolism. Cannon and Querido[2] believe that the latter occurs in response to suprarenal secretion. Several investigators have confirmed the augmenting influence of epinephrin on metabolism; and it is known that increased secretion of the suprarenals accelerates the oxidative processes. The Harvard physiologists have supplemented the story by a demonstration that cold actually increases the output of epinephrin from the suprarenal medulla. By administering known volumes of water at a definite (cold) temperature, they have established what they fancifully term a "heat liability" of known amount in the body; for the cool liquid abstracts from the tissues heat that must be restored. Only when larger "heat liabilities" are produced does shivering occur. When the function of the suprarenals is excluded, in animals,

1. McCutcheon, M.: The Rate of Locomotion of Human Lymphocytes in Vitro, Am. J. Physiol. **69**: 279 (July) 1924.

1. Travell, J. G., and Behre, J. A.: The Effect of Insulin upon the Rate of Fermentation of Glucose by Yeast, Proc. Soc. Exper. Biol. & Med. **21**: 478 (May) 1924.
2. Cannon, W. B., and Querido, A.: The Rôle of Adrenal Secretion in the Chemical Control of Body Temperature, Proc. Nat. Acad. Sc. **10**: 245 (June) 1924.

this chemical augmentation of metabolism no longer succeeds, thus bearing witness to the specific part played by the secretion of the glands. Furthermore, from the investigations of Cannon and Pereira,[3] it now appears that heat production in fever may represent the outcome of increased suprarenal secretion, a fact corresponding with the reduction of the epinephrin content of the medulla in infections.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Tuberculosis Clinic.—The Arkansas Tuberculosis Association, at the invitation of the Garland County Medical Society, recently conducted the first field clinic in the state for the discovery of early cases of tuberculosis.

FLORIDA

Health Department Moves.—The department of health of Palm Beach will soon move to the State Board of Health Building, on Third Avenue, which building has been authorized to be opened after being unoccupied since its erection three years ago.

GEORGIA

Physician Held.—Dr. H. E. Pontius, Atlanta, was arrested, August 18, on a charge of violating the Harrison Narcotic Law, it is reported. Dr. Pontius waived hearing before the U. S. commissioner and was released under bond. Pontius was sentenced for a similar offense to eighteen months in the federal penitentiary in 1922.

Medical Society Reorganized.—The Fourth Congressional District Medical Society, which had not held meetings in several years, was formally reorganized at Warm Springs recently, and the following officers elected: president, Dr. Mercer Blanchard, Columbus; vice president, Dr. Wallace H. Clark, LaGrange; secretary-treasurer, Dr. Francis B. Blackmar, Columbus. The fourth district comprises the counties of Carroll, Chattahoochee, Coweta, Harris, Herd, Marion, Meriweather, Muscogee and Talbot.

ILLINOIS

Personal.—Dr. Joseph W. Edwards, Mendota, recently celebrated his ninety-second birthday.——Dr. and Mrs. Charles F. Bradway, Abingdon, celebrated their golden wedding anniversary, August 16.

Hospital News.—Ground was recently broken for a $500,000 hospital building for the St. James Hospital, Chicago Heights.——The King's Daughters, Evanston, recently opened a home for convalescent heart patients, admitting girls and women selected from a limited group. Until the community develops, all applications are to be sent through the office of the Chicago Association for the Prevention and Relief of Heart Disease.

Chicago

Personal.—Dr. Ralph B. Cobb has been appointed superintendent of the Iroquois Memorial Hospital, Chicago.——Dr. Norman Bridge, formerly of Chicago, has subscribed $150,000 to the Southwest Museum of Art, Los Angeles.

Rush Cornerstone Removed.—The cornerstone of Rush Medical College, laid Nov. 20, 1875, was moved, August 28, in the wrecking operations now under way. The Grand Master of the Masonic Lodge of Illinois removed the box from the stone containing records that had lain there forty-nine years. There were copies of the *Chicago Medical Journal* of the year 1867, copies of Chicago newspapers, a city directory, tourists' guide for the year 1875, the Rush Medical College charter, pictures of the faculty and the valedictorian address of 1871. A number of prominent Chicago physicians were present at the ceremony.

3. Cannon, W. B., and Pereira, J. R.: Increase of Adrenal Secretion in Fever, Proc. Nat. Acad. Sc. **10**: 247 (June) 1924.

KENTUCKY

Personal.—Dr. William W. Zwick, Georgetown, has been appointed university physician to the state university, Lexington.

Chiropractor Charged with Murder.—Mack MacGregor, who claims to be a chiropractor, was arrested, August 19, in Bowling Green on advice from the sheriff at Guntersville, Ala., charged with murder in the second degree, it is reported. MacGregor was tried about a month ago at Bowling Green on a charge of practicing chiropractic without a license.

Trachoma in Johnson County.—The county health department, cooperating with the Bureau of Trachoma of the State Board of Health, has completed a three weeks' investigation of trachoma in Johnson County. A total of 1,586 school children were examined, of whom 770 had physical defects of some kind. About 150 cases of trachoma were treated medically and twenty-nine cases surgically.

Appointments at University School of Medicine.—The following additions to the faculty of the University of Louisville School of Medicine have been announced: H. O. Calvery, formerly instructor, University of Illinois, to be assistant professor of chemistry; W. H. Dawson, formerly demonstrator in pathology, McGill University Faculty of Medicine, to be instructor in pathology and bacteriology; Dr. Charles J. Armstrong, formerly professor of chemistry and physics, Meridian College, and assistant resident surgeon, Barnes Hospital, St. Louis, to be resident in surgery; David C. Elliott, formerly research assistant in anesthesia, department of pharmacology, University of Cincinnati College of Medicine, to be resident anesthetist. The following administrative changes have been made: Dr. Herbert Hart Hagan, instructor in surgery, formerly assistant resident surgeon at Barnes Hospital, St. Louis, to be executive of the surgical division, Louisville City Hospital; J. W. Hancock, assistant in surgery, to be executive in the surgical dispensary, Louisville City Hospital; Dr. Oscar O. Miller, director of the Tuberculosis Clinic and superintendent of the Waverly Hills Sanatorium, to be assistant clinical professor of medicine; Dr. William Curry Martin, D.P.H., Johns Hopkins, to be lecturer in public health and hygiene and assistant in medicine; Dr. Alice N. Pickett, instructor in obstetrics. The following additions have been made to the clinical faculty: Dr. Herman Mahaffey, clinical assistant in medicine; Dr. Hugh H. Richeson, clinical assistant in ophthalmology; Dr. George E. Vaughan, clinical assistant in otology, rhinology and laryngology; Dr. Clyde McNeill, clinical assistant in medicine; Dr. Lyle Atherton, clinical assistant in gynecology.

LOUISIANA

Hospital News.—The new $260,000 North Louisiana Sanatorium building, Shreveport, owned by Dr. Arthur A. Herold, Shreveport, and Louis I. Abramson, was recently opened.——By the will of Mrs. Alexina McBurney, the Charity Hospital of Louisiana, New Orleans, was made the beneficiary to the extent of about $400,000, and the Presbyterian Hospital to the extent of about $250,000. The bequest to the Charity Hospital was for the purpose of endowing an annex for tuberculous patients, and the endowment will be known as the Alexina Sinclair McBurney Fund. The bequest to the Presbyterian Hospital makes possible the establishment of a free clinic, and this fund will be known as the Alexina Sinclair Fund. J. C. Barr, Edward F. Bacon and John Davison are named executors. The Charity Hospital has decided to extend to Claiborne Avenue, taking in the entire block front between Tulane Avenue and Gravier Street, which plans will necessitate acquiring for expansion purposes sixteen property holdings.

Meeting to Establish Health Unit.—A representative of the U. S. Public Health Service, in cooperation with the Louisiana State Board of Health, held a meeting at Rayville, recently, to explain the purpose of a public health unit. It was stated that with $3,750 appropriated by Richland Parish, a like sum would be contributed by the U. S. Public Health Service and the state board of health. With this fund ($7,500) a full-time physician could be appointed by the state board of health who would examine the public school children to ascertain their physical defects and to recommend to parents such corrections as might be beneficial. A trained nurse could be provided to work among the school children and visit the homes. A dentist could also be provided for short periods to look after the teeth of school children under 12 years of age. A resolution was passed at this meeting recommending that the expense of a health unit be borne by all the people

of the parish, and that the police jury should be asked to contribute $1,500, the school board $1,500, the town of Rayville $1,500, Mangham $175 and Delhi $175, and that a general public meeting be called in each of the towns mentioned without delay to present this matter to the people.

MAINE

Medical Association and Crippled Children.—At the recent annual meeting, the house of delegates of the Maine Medical Association approved the request of the Maine Public Health Association that the former direct the examination of crippled children.

Donation for a Marine Hospital.—A grateful patient or friend of the marine hospital service, in 1878, donated $523.50 "for the benefit of the Marine Hospital of Bath, Me." The money was then placed at interest by the collector of customs and is still on deposit, because there was not then, and never has been, a marine hospital at Bath. The nearest ones on that coast are located at Portland and Boston.

MARYLAND

Illegal Practitioner Arrested.—Jacques A. Gordon was arrested at Atlantic City, August 29, charged with practicing medicine without a license, it is reported. Gordon who wrote prescriptions for guests at a prominent hotel where he was stopping, was employed for some time in an emergency hospital tent on the beach.

Personal.—Dr. Walter C. Craig, assistant director at the Johns Hopkins Hospital, Baltimore, has resigned to accept a position in the department of surgery at Yale University School of Medicine, New Haven, Conn. Dr. Craig will be succeeded by Dr. John H. Snoke who until recently was superintendent of St. Luke's Hospital, Shanghai, China.

Women Oppose Maternity Act.—The American Federation of Democratic Women and the Women's Constitutional League of Maryland have both asked the state legislature to refuse to cooperate with the Federal Maternity Act. The latter organization said in part: "We think that this bureau has disregarded the established methods which have built up public health work in the counties, methods that have gained the support and appealed to the pride and interest of the people, giving them in addition to general health work, help and instruction in maternal and child hygiene which can never be divorced successfully from general health problems. Instead of building on this foundation, however, a separate bureau has been established and separate nurses have been employed, these nurses receiving higher salaries than those paid to other public health nurses, thus tending to break down the morale of those who have been giving faithful service for smaller compensation."

MASSACHUSETTS

Changes in Pediatric Service.—Drs. James Herbert Young and Joseph Garland have been appointed visiting physicians, and Dr. Eli C. Romberg visiting physician to outpatients, on the pediatric service at the Massachusetts General Hospital.

University News.—The following changes at the Medical School of Harvard University, Boston, have been reported: Dr. Derric C. Parmenter will succeed Dr. Wade Wright, who has resigned to take up work with the Metropolitan Life Insurance Company, New York; Dr. Carl Rupp Doering has been appointed instructor in vital statistics; Dr. Edward Godfrey Huber, assistant in vital statistics, and Dr. Charles Alexander Mackay, instructor in ventilation and illumination.

State Board Hearing Forbidden.—Following the revocation of the license of Dr. Percy A. Shurtleff, West Springfield (THE JOURNAL, August 16, p. 539), by the Board of Registration in Medicine, Dr. George H. Davis, alleged to have been a successor of Dr. Shurtleff, was summoned for a hearing before the board, August 14. A court, however, issued a restraining order forbidding the board to hold the hearing in the case of Dr. Davis until the supreme court has acted on the appeal of Dr. Shurtleff. Dr. Davis, it is reported, intends to test the constitutionality of the law under which the board is acting.

MICHIGAN

Society News.—Dr. Frank P. Bohn, Newberry, has been elected president of the Upper Peninsula Medical Society. Dr. Bohn is a member of the Michigan senate. Dr. Arthur S. Kitchen, Escanaba, was elected vice president, and Escanaba was selected as the next meeting place.

Births in Michigan.—The greatest number of births in 1923 in Michigan, according to the state health department, occurred in August, the lowest number in November. There were 47,741 boys and 45,215 girls born during the year, among whom only 1,834 were colored children, of which fourteen were Chinese, seven Indian, and 1,814 negroes. There were 1,210 illegitimate births, and 1,937 children born in plural births, including five sets of triplets.

State Medical Society.—The Michigan State Medical Society will hold its annual meeting under the presidency of Dr. Guy L. Connor, Detroit, at Mount Clemens, September 9-11. The six scientific sections will join in a combined sectional clinical meeting to be conducted by Dr. Emanuel Libman, New York, on the last day of the meeting. Twelve out-of-state speakers are on the program. Dr. William D. Haggard, Nashville, Tenn., president-elect of the American Medical Association, will address one of the general meetings on "The Relationship of the Physician to the Public."

MINNESOTA

Conference on Contagious Disease.—A conference of state, city and county health officers, superintendents of hospitals, orphanages and similar institutions, called by the state board of health, was held at the Capitol Building, Minneapolis, August 19, to adopt regulations for public and private institutions, particularly hospitals, that will help prevent communicable disease in Minnesota. Dr. Charles Scofield Benson, president of the state board of health, who presided, was instructed to appoint a committee to make an extensive study of the problems. The committee's report will be submitted to the state board of health and the state board of control. The following physicians are on the committee: Drs. Jesse L. McElroy, St. Paul; Louis B. Baldwin, Minneapolis; William Mills, Charles Bolsta, Ortonville; Francis E. Harrington, Minneapolis; Oscar E. Locken, Crookston; Owen W. Parker, Ely; Walter H. Valentine, Tracy, and James H. Haines, Stillwater.

Resolution on Smallpox Vaccination.—In connection with the smallpox situation in this state (THE JOURNAL, August 16, p. 539), the Olmsted County Medical Society adopted the following resolution, which was introduced by Dr. Charles H. Mayo, Rochester:

WHEREAS, Vaccination against smallpox and typhoid fever has been attacked by various pseudoscientific societies and in some instances by the public press as being ineffective in the prevention of these diseases and dangerous to the health of those vaccinated; and

WHEREAS, The experience of the medical department of the U. S. Army has proved conclusively that, in the case of typhoid fever, vaccination is a safe and dependable measure, responsible for the saving of thousands of lives during the World War, as is shown by a comparison of the typhoid rate during the Civil War before antityphoid vaccination was known, and the rate during the World War, indicating that, had the former rate prevailed, over 60,000 Americans would have died of the disease instead of the actual number, which was barely 200; and

WHEREAS, General neglect of vaccination against smallpox is leading to a greatly increased prevalence, and in some places to its appearances in epidemic and in virulent form; and

WHEREAS, There is positive proof as shown by the records of state and municipal health departments that vaccination with revaccination will prevent smallpox; and

WHEREAS, Vaccination properly performed and cared for carries no appreciable risk to the health of those vaccinated, as proved by the extensive experience of army surgeons who have treated hundreds of thousands of persons without a death; therefore, be it

Resolved, That the members of the Olmsted County Medical Society hereby publicly endorse vaccination as a most effective means for the protection of individuals and community health; and further, that they go on record to the effect that the vaccination is a harmless procedure and conducive to public welfare.

MISSOURI

Chiropractor Arrested.—Edwin F. Schwenker, a chiropractor, St. Louis, was arrested, August 13, charged with practicing medicine without a license. The evidence in this case was obtained by the health department.

Illegal Practitioner Escapes.—Ernest Behagen, St. Louis, who was serving a two year sentence in the workhouse for practicing medicine without a license, escaped from that institution, August 6, and has not been captured.

Evacuation Hospital Appointments.—The following physicians have been appointed on the staff of evacuation hospital No. 67 (Missouri Baptist Sanitarium Unit, St. Louis), organized reserves: commanding officer, Lieut.-Col. William H. Luedde; executive officer, Major Edward Lee Dorsett; chief of surgical service, Lieut.-Col. Willard Bartlett; chief of medical service, Lieut.-Col. Oliver H. Campbell.

Diploma Mill Graduates in India.—There are so many so-called doctors in India who style themselves graduates of the Kansas City College of Medicine and Surgery, says the

Indian Medical Record, that "we publish here the report of an investigation by the Connecticut special grand jury about this college. It will show that these diplomas are sold for money and that the college is a fraudulent affair."

Proprietor of "Health Baths" Arrested.—Ferdinand C. A. Meyer, Overland, was recently arrested, charged with practicing medicine without a license, it is reported. The arrest was made on complaint of parents who claimed that Meyer mistreated their daughter. Meyer's "sanitarium" consisted of a one-room house of a primitive type. On Meyer's business card was the following: "Scientific massage; corrective feeding; Gospel natoropath since 1915; proprietor of the rural health baths."

Circuit Court Upholds State Board.—Judge Willard P. Hall, of the Independence Division of the Circuit Court, in a recent decision supported the action of the state board of health in refusing to accept for examination for license to practice medicine graduates of the Kansas City College of Physicians and Surgeons, whose dean, Dr. Abraham L. McKenzie, had brought suit against the board on a writ of certiorari, claiming that the state board of health had been unfair in its attitude toward the school. Judge Hall pointed out in his decision that Dr. McKenzie admitted on the stand that the financial condition of the school did not permit the employment of "high priced medical experts" as instructors. The judge also drew attention to the fact that, according to the testimony, the equipment of the school was inadequate. Testimony concerning the necessary equipment of a medical school was given by members of the Jackson County Medical Society.

NEBRASKA

Hospital News.—The new Good Samaritan Hospital at Kearney, erected at a cost of $250,000, was officially opened, July 23.

Physician Arrested.—Dr. George R. Gilbert, Omaha, was recently arrested on a charge of selling narcotics to a drug addict, it is reported. The transaction occurred in Council Bluffs, and Dr. Gilbert was returned to that city and placed in the county jail.

NEW JERSEY

Smallpox in Camden.—It is reported that of three deaths from smallpox which occurred in Camden in one week in the present epidemic, none of the victims had ever been vaccinated.

NEW YORK

Hospital News.—Plans are being drawn for an addition to the Albany Hospital, Albany, which will cost $750,000.

Free Mental Clinics.—The superintendent of the State Hospital, Binghamton, Dr. William C. Garvin, has announced that free mental clinics will be established by that institution in Boone, Chenango, Cortland, Chemung, Delaware, Otsego, Schoharie, Madison and Tompkins counties.

County Laboratories.—The development of laboratory facilities in Montgomery County has been rapid during the last year, according to the state department of health. State aid has made it possible to increase the staff. Two branch laboratories in the county are being established, one at St. Mary's Hospital and one at the Montgomery Sanatorium. The work of the central county laboratory has been increased and plans are being made to have all types of routine diagnostic examinations performed there.

Damage Suits Follow Typhoid Epidemic.—The city of Albany has been made defendant in three damage suits following the typhoid epidemic of last May. Mrs. Esther Murdick, it is reported, asks $25,000 for the death of her mother; John Weisner asks $25,000, and an additional $2,500 for expenses, for the impaired health of one son and the illness of two other children; Harris Braun asks $10,000 for his illness, alleging that the city authorities knew the water was contaminated but failed to notify residents.

Heart Association Changes Name.—The name of the New York Association for the Prevention and Relief of Heart Disease has been changed to The New York Heart Association. This association was formed in 1915, and, in the last five years, has grown from a membership of 125 to 268, and from an income of more than $4,000 to an income of more than $17,000. There are 140 cardiac clinics in the United States, of which forty-eight are in New York. Four other cities, Boston, Philadelphia, Indianapolis and Chicago, have started heart associations since this association was formed, and six more groups are planning similar societies. Children with heart disease were placed in fresh air homes for the first time in 1922. Places were promised for 625 children this summer. Trade classes for girls with heart disease, as an annex to the Manhattan Trade School, were started in 1923. Eighty-two girls passed through these classes during the year. Early this year, classes for boys, who were refused permits to work, were added. The Associated Cardiac Clinics came into the association this year as a committee of the association.

New York City

Physician Held to Grand Jury.—Dr. Harry M. Serota, New York, has been held to the federal grand jury on waiving examination on a charge of violating the Harrison Narcotic Law, it is reported.

Physician Held.—Dr. Hugo J. Loebinger and three ex-convicts were arrested, August 23, charged with attempting to swindle a wealthy Manhattan furrier out of $7,000, it is reported. Loebinger, who is 61 years of age, a graduate of the University of Erlangen, Germany, and has an office at 320 West Eighty-First Street, Manhattan, is alleged to have been the go-between for the ex-convicts and the furrier.

Personal.—Dr. William Irving Sirovich is the democratic nominee for Congress of the fourteenth congressional district, which includes the major part of the East Side of New York.——Dr. Smith Ely Jelliffe has returned from a meeting of neurologists and alienists of French-speaking countries, held in Brussels the first week in August. Dr. Jelliffe was an official delegate from the American Neurological Association and the American Psychiatric Society.

Maternity Work in a Colored Community.—A report covering six years' work among colored mothers and children in the Columbus Hill district, New York, has recently been issued by the New York Association for Improving the Condition of the Poor. During this period, this association supervised 1,224 pregnancies, an average of 204 a year. Ninety-four per cent. of these patients were delivered either in hospital wards or by hospital physicians at home. Six hundred and fifty-six patients were given prenatal care for a period of three months or more; 241 for two months and less than three; 313 for one month and less than two. The report states that there can be no question that the group receiving the greatest amount of prenatal care showed the best results, for in this group 93.2 per cent. of the children were reported as live babies at the end of the first month, whereas in the group receiving the lesser amount of prenatal care only 83.1 per cent. were so reported. It should be pointed out, however, that the latter includes the greater portion of the mothers whose pregnancy had been prematurely terminated. Of these 1,224 pregnancies, 23.3 per cent. apparently were complicated by syphilis.

NORTH CAROLINA

Physician Arrested.—Dr. T. F. Jones, Raleigh, was recently arrested, and in default of bond placed in jail, for violation of the Harrison Narcotic Law, it is reported. Dr. Jones was indicted under a similar charge last year.

Physician Bound to Grand Jury.—Dr. Ptolmey P. Chambers, Asheville, who, it is reported, was recently arrested charged with violation of the Harrison Narcotic Law (THE JOURNAL, August 23, p. 620), was bound over to the federal grand jury under bond of $1,000 at a preliminary hearing, August 16.

Unvaccinated School Children.—Having announced that vaccination would be required, the Buncombe County health authorities, August 1, denied admission to the public schools of the county to more than 2,500 unvaccinated children. It is expected that temporary permits will be issued to most of these children and that in a short time they will have been vaccinated against smallpox.

Personal.—At the semiannual meeting of the Third District Medical Society, comprising the counties of Columbus, New Hanover, Onslow, Pender, Brunswick, Bladen and Sampson, Dr. Albert Anderson, Raleigh, president of the state association, gave an address on "Mental Hygiene."——Dr. Charles O. Delaney has been appointed on the staff of the Lawrence Hospital, Winston-Salem.——Drs. Henry C. Salmons and Robert R. Garvey of Elkin will open a hospital of twelve beds at Elkin about September 1.

Report of Orthopedic Hospital.—The annual report of the State Orthopedic Hospital, Gastonia, recently issued, shows that, since the hospital opened, in July, 1921, 1,572 crippled

children from eighty-eight of the 100 counties in the state have been treated there. The superintendent, Dr. Oscar L. Miller, has conducted clinics throughout the state to bring to the attention of the public the opportunities afforded for the treatment of deformities. The hospital needs now a ward for colored children, and an appropriation for that purpose will be asked at the next legislature.

NORTH DAKOTA

Physician Arrested.—Dr. William R. Shortridge, Flasher, who has been under $6,000 bonds awaiting trial for an alleged criminal operation, was arrested, August 16, at Fort Yates on statutory charges and held without bail pending further investigation of another criminal operation, it is reported.

OHIO

Smallpox in Toledo.—Three deaths in Toledo, August 18, made a total of thirty-four due to smallpox in the city and county since May 1. There were still nineteen cases of smallpox in the Contagious Disease Hospital, of which sixteen were of the hemorrhagic type.

New President at Western Reserve University.—The trustees and faculties of Western Reserve University, Cleveland, announce the inauguration of Robert Ernest Vinson, LL.D., president of the university, October 9, on which date the dedication of the new buildings of the school of medicine will also take place.

Illegal Practitioner Arrested.—William Wilson, Cleveland, was arrested, August 22, on complaint of a "patient," for practicing medicine without a license, it is reported. The "medicine" prescribed for this patient, who had diabetes, was found to be vinegar. The police found five other persons who had been treated by Wilson.

Tornado Relief Work.—The *Red Cross Courier*, August 23, states that about 500 families in northern Ohio, victims of the tornado of June 28, are still living in tents, and that the final figures show seventy-eight persons killed by the storm, 351 injured, 261 houses totally destroyed, 298 buildings damaged, and 7,225 persons made homeless. Up to August 16, about $215,000 had been awarded to 339 families for rehabilitation purposes. No funds from money raised throughout the state were given those who were financially able to help themselves. Reports from the state committee raising relief funds show that about $850,000 had been collected to date.

Academy of Medicine Incorporated.—The incorporation of the Academy of Medicine of Cleveland has been completed and the secretary of state has issued a charter. The change necessitated the election of a board of directors or trustees by the members who shall hold office for a stated period of years. The new board of directors comprises Drs. Harold Feil, Samuel J. Webster, Edward P. Monaghan, L. Morris, Clyde L. Cummer, Jacob E. Tuckerman, Harold O. Ruh, Frederick J. Wood, Harry V. Paryzek, Lawrence A. Pomeroy, Arthur J. Skeel, Frank S. Gibson, John D. Osmond, Richard Dexter, Harry D. Piercy. The new officers are: president, Jacob E. Tuckerman; vice president, Edward P. Monaghan; secretary-treasurer, H. V. Paryzek.

OKLAHOMA

Personal.—Dr. Roy L. Cochran, Caddo, has been appointed director of the full-time county health unit for Pittsburg County.

PENNSYLVANIA

Hospital News.—The Spencer Hospital, Meadville, will soon begin the construction of an $85,000 building to replace the structure damaged by fire.

New Process for Garbage Disposal.—Experiments having given satisfactory results, the city of Lebanon has decided to dispose of its garbage by grinding, then discharging it through the outfall sewer into the Imhoff tanks that are a part of the city's sewer works. According to Fox and Davis, the addition of from 10 to 12 tons of garbage a day to the sewage will not increase materially the total solid matter flowing into the tanks, as from 75 to 80 per cent. of the garbage is water. It is estimated that the total cost of collection and disposal of the garbage will not exceed $4 a ton.

Philadelphia

Dr. Piersol's Will.—The will of the late Dr. George A. Piersol, professor emeritus of anatomy at the University of Pennsylvania, was presented for probate, August 25. To his son, the father gave his scientific library, charts, apparatus and instruments with the suggestion that such as he may not desire to keep be presented to the University of Pennsylvania School of Medicine for the sole purpose of the anatomic department.

RHODE ISLAND

Hospital News.—Bids have been taken for a $700,000 building for the Providence Lying-In Hospital.——Plans are being drawn for a $275,000 building for the South County Hospital.

SOUTH CAROLINA

Personal.—Dr. Drayton M. Crosson, Leesville, president of the South Carolina Medical Association, is a candidate for Congress from the seventh district.

Children's Clinic.—The state board of health, cooperating with the Darlington County health department, conducted a children's clinic at Hartsville, August 12-13, which was attended by seventy-six children. It is said that sixty operations for the removal of either the tonsils or adenoids were performed during the two days.

TENNESSEE

Knoxville Epidemic.—In a newspaper article, Dr. Marvin Haygood, health officer, Knoxville, August 17, stated, it is reported, that the typhoid outbreak is on the decline. The total number of cases reported since June 1 is 150, with seven deaths. As to the cause of the epidemic, the examination of various private spring waters showed that more than 90 per cent. of them were contaminated.

TEXAS

Personal.—Dr. Samuel Kennedy has been appointed city health officer of Grapeland.

Free Clinic Opened.—A clinic, which will provide treatment for people unable to pay, has been opened at Provident Sanitarium, Waco, with a staff comprising thirty-five physicians. Special attention will be paid to the prevention of disease.

Society News.—At the recent meeting of the Seventh District Medical Society in Austin, Dr. Thomas J. Bennett, a former president of the state medical association, gave an address.——At the meeting of the North Texas Medical Association, Decatur, an old-fashioned barbecue was held at Decatur Lake. The president, Dr. George D. Lain, stated this was the first time the North Texas Medical Association had met in the west end of the district.

Hospital News.—Work will begin at once on a new $50,000 county hospital at Seymour.——A new sanatorium, to be owned by Dr. James C. Loveless, will be erected at Lamesa. ——The Johnson-Beall Hospital, Fort Worth, has changed its name to the Southwestern Hospital.——Plans have been drawn and the contract awarded for a $40,000 hospital at Graham. Mr. M. K. Graham donated one half the cost of the hospital and other citizens of Graham and vicinity are donating one half.

University News.—The vacancy in the chair of physiology, created by the resignation of Dr. Charles C. Gault, has been filled by the appointment of Eugene Lyman Porter, Ph.D., formerly assistant professor of physiology, Western Reserve University School of Medicine, Cleveland.——The vacancy in the University of Texas College of Pharmacy, caused by the death of Dr. Raoul R. D. Cline, has been filled by the appointment of William F. Gidley, B.S., professor of pharmacy at Purdue University.——There have been 104 applications received for entrance to the freshman class of the University of Texas Department of Medicine this fall. The class will be limited to sixty, and the scholarship grade of admission this year is a general average of 82 per cent. in all premedical subjects.

WASHINGTON

Typhoid at Walla Walla.—Four new cases of typhoid fever were reported at Walla Walla, August 16. The county health department issued a warning concerning the springs and wells throughout the country. It is reported that of more than 150 samples of water from these sources, more than 90 per cent. were found to be contaminated.

Hospital News.—A group of nineteen physicians have formed the Walla Walla Hospital Association for the purpose of constructing a nonsectarian hospital at Birch and Palouse streets, for which $150,000 in bonds will be issued. The management of the hospital will be under the control and direction of such officers and persons as may be prescribed by the by-laws and such as are contemplated by the statutes of the state of Washington.

WISCONSIN

Hospital News.—St. Mary's Hospital, Milwaukee, has purchased the residence at 481 Terrace Avenue for a nurses' home.——Plans are being drawn for a $25,000 hospital building for the Lutheran Hospital, Dodgeville.

State Medical Society Election.—At the annual session of the State Medical Society of Wisconsin, August 20-22, at Green Bay, Dr. Wilson Cunningham, Platteville, was elected president; and Drs. James G. Taylor, Milwaukee, Henry A. Jegi, Galesville, and Howard E. Curl, Sheboygan, vice presidents. A secretary will be elected in January. Milwaukee was chosen for the next annual convention.

PHILIPPINE ISLANDS

Personal.—Col. Edward L. Munson, M. C., U. S. Army, until recently health adviser to the Philippine government, was the guest of honor at a farewell dinner in Manila, June 28.

University News.—The following promotions and appointments have recently been made at the College of Medicine of the University of the Philippines, Manila: Dr. J. Eduque to be head of the department of surgery vice the late Dr. P. Guazon; Dr. Carmelo Reyes, associate professor of surgery and gynecology; Dr. H. Acosta Sison, associate professor of obstetrics; Dr. Herminio Velarde, associate professor of ophthalmology, otology and rhinolaryngology, and Dr. F. Garcia, associate professor of pharmacology; Drs. M. Limson and A. Tupas, promoted to assistant professors of anatomy and pediatrics, respectively; assistants in medicine, Drs. Modesta Ignacio, Patricio Ignacio and F. Arreola; assistants in surgery, Drs. A. Zavalla, A. Agcaoili and A. del Rosario.

GENERAL

Public Health Association Meeting.—The next annual meeting of the American Public Health Association will be held in Detroit, October 20-23.

Society News.—At the recent meeting of the American Proctologic Society, New York, Dr. Frank C. Yeomans, New York, was elected president, Dr. William A. Rolfe, Boston, vice president, and Dr. Joseph F. Montague, New York, secretary-treasurer.

The Poliomyelitis Epidemics.—On August 19, there had been a total of sixteen cases of poliomyelitis, with seven deaths, at Missoula, Mont., a total of ninety-eight cases at Syracuse, N. Y., and a total of eight cases with one death at Buffalo.

Public Health Nurses.—In a comment on public health nursing, the *Journal of the Indiana State Medical Association* quotes from a Red Cross director concerning the principles observed by reputable public health nursing agencies in part as follows: "(1) Public health nurses do not diagnose, do not prescribe drugs and do not give treatment without a doctor's orders. (2) Public health nurses do not give nursing care after the first visit without a doctor's orders. (3) Public health nurses do not recommend individual doctors but advise patients to go to their family physician. (4) Public health nurses do not recommend that patients change doctors or seek hospital care when they have a family physician."

Faith "Cures."—A study of alleged faith "cures" was made by a committee composed of eight physicians, eleven ministers, three university professors and one lawyer, appointed by the General Ministerial Association of Vancouver "to inquire into the authenticity of the alleged cures and present the conclusions which they drew from the facts." According to *The Survey*, 350 persons, supposedly "cured," whose ailments covered a list of more than sixty diseases and deformities, were investigated. Of this number of patients, five had been so distinctly benefited that at the end of six months they could be regarded honestly as cured. Thirty-eight patients showed improvements; 212, no change, although at the time of "anointing" they had been declared cured. Seventeen patients were distinctly worse. Thirty-nine had died and five of the persons "anointed" had become insane.

Sterility and the Roentgen Ray.—That sterility follows constant work with the roentgen ray has been disproved, at least, in the roentgen-ray department of the Royal Victoria Hospital, Montreal. The director, Dr. Alexander H. Pirie, in a letter to the *American Journal of Roentgenology and Radium Therapy*, writes that, in the last two months, three members of his staff have had additions to their families. One of these makes roentgenograms all day, one gives treatments and does dental work, the third does fluoroscopic work. The three babies are healthy and well formed. Citing an instance of which he had personal knowledge, Dr. Pirie adds, however, that even a small defect in the protective apparatus may damage the operator. A stray beam which came through an unsuspected crack in the protection played on the operator for hours each day and caused sterility.

Homicides.—In twenty-eight cities, for which data is available, the murder rate has practically doubled since 1900, according to Hoffman. For the United States death registration area in 1922, the rate was 8.4 per hundred thousand for the entire population, 5.6 for the white population and 30.7 for the colored. In Atlanta, Ga., the white murder rate was 16.5 per hundred thousand, the colored rate 105.4; in Birmingham, Ala., the white rate was 26.7, the colored 108; in Memphis, Tenn., the white rate was 24.6 and the colored rate 145.2. The major factor in the murder record is death by firearms. In 1921, the rate for all methods was 8.5 per hundred thousand, and of this, 6.2 was due to death from firearms, while in England and Wales, in 1922, only sixteen out of 202 deaths were caused by this method. Of seventy-nine cities for which figures were available for 1922 and 1923, Memphis heads the list with a rate of 65; Jacksonville followed with a rate of 61.7. The rate is decidedly higher in the cities of the South than in the cities of the North and West.

LATIN AMERICA

Personal.—Dr. J. A. Presno, editor of the *Revista de Medicina y Cirugía* of Havana, president of the Academia de Ciencias, has been elected corresponding member of the Société de chirugie at Paris. The French government has also decorated him as chevalier of the Legion of Honor.——Prof. E. Vitoria, director of the Sarriá institute for chemistry at Barcelona, has arrived in Argentina where he is to deliver a course of lectures at the Buenos Aires and La Plata universities on chemistry and laboratory methods.

FOREIGN

Relief Fund for China.—On the basis of a report transmitted through the state department by the minister at Peking, the American Red Cross cabled a fund of $100,000 for the relief of victims of the recent floods in several provinces in China.

Hospital Changes Name.—At the next annual meeting of the British Dentists' Hospital, London, founded in 1911 to assist persons unable to pay the ordinary charges of dentists, the name will be changed to the British Dental Hospital. This hospital pays its way with small fees on a regular scale charged for service, and the work is done by qualified dentists, numbering at present thirty-seven, who must be members of the British Dental Association.

The Junior Red Cross.—This is the name of a movement, says the *British Medical Journal*, which is thought to have originated in the schools of Canada about 1916 although it began independently in the schools of Australia at about the same time. It has spread to the schools of twenty-one countries and its members number about 6,000,000 children. Its main object is to inspire children with the idea of service. The organization has begun the issue of the *Junior Red Cross Journal*.

Schick Testing in Australia.—At a recent conference of medical officers of health of Australia, the question was raised as to whether there was sufficient material on hand to carry out Schick testing. The Commonwealth Serum Laboratories then announced that there was in stock a specially prepared toxin sufficient to carry out the Schick test on more than 300,000 children and that a practically unlimited amount of toxin was available for issue on short notice; also, that toxin-antitoxin and culture mediums were obtainable.

Tribute to Pawlow.—It is proposed to celebrate the seventy-fifth birthday of Prof. Ivan P. Pawlow, the physiologist, September 21, by issuing a souvenir volume of the *Archives for Biologic Sciences*, the official organ of the Institute for Experimental Medicine at Petrograd [the postoffice name now is Leningrad]. The articles for the special number are to be published in the writer's language. Professor Pawlow has declined any personal official ceremony. He received the Nobel prize in medicine in 1905. His visit to this country in 1923 was unfortunately prematurely terminated by the theft of his money (THE JOURNAL, July 28, 1923, page 303).

British Conference on Patent Medicines.—At the sixty-first annual meeting of the British Pharmaceutical Congress, held recently at Bath, the principal subject of discussion was whether legislation should be introduced to control the manufacture and sale of patent medicines. Philip F. Rowsell, vice president of the Pharmaceutical Society of Great Britain,

said it was a matter of urgent public necessity to remedy at once the more flagrant abuses which existed in the sale of patent medicines; for, except as patent medicines came within the scope of the Poisons and Pharmacy Act, the trade was subject to no important restrictions, and that the trade was increasing, for in 1914 the receipts from the medicine stamp duty was £360,000, while in 1923 they were nearly £1,250,000.

Contributions to Relieve Distress in Germany.—The German central committee in charge of the foreign relief work has issued its report for 1922 and 1923. Receipts of money from other countries totaled 600,000 gold marks, and almost 8,000 tons of articles of food were received. This is included in the 11,000 tons of goods received in 1922 and 14,000 in 1923, valued at 14,000,000 gold marks. In addition to these sums, 42,000,000 were contributed by foreign countries for the feeding of school children, and Germany supplemented this with 21,000,000, besides the 5,000,000 used to carry on the work in October, 1923, when foreign aid for this purpose was withdrawn. The gold mark is the full value of the mark, 23.8 cents.

Clinical Prize for General Practitioners.—The council of the British Medical Association has decided to establish, experimentally, an annual prize of 50 guineas for an essay or lecture for the purpose of stimulating observation, research and record in general practice. It will be called the Sir Charles Hastings Clinical Prize and will be first awarded in 1926. Any member of the association, who is engaged in general practice, is eligible to compete for the prize. The work submitted must include personal observation and experience of the candidate collected in general practice. If no essay is submitted of sufficient merit, no award will be made. The candidate who wins the prize may publish his paper in the *British Medical Journal* or deliver a lecture on the subject at a meeting of the association.

International Dental Federation.—At the sixth meeting at Luxembourg, August 3-5, of the International Dental Federation, Dr. Truman W. Brophy, Chicago, president of the federation, was awarded the Miller memorial prize for important work in connection with dentistry. The federation advised the desirability of establishing a dental department under a dental controller in the ministries of health of all countries. Only two or three countries have adopted this course so far. Questions relating to the organization of the next international congress, at which a membership of over 8,000 is expected, were brought forward by the general secretary of the congress. The next meeting was fixed to take place in Geneva, August 5-7, 1925, at the invitation of the Swiss National Dental Association.

Personal.—Dr. Arthur W. M. Ellis has been appointed to the university chair of medicine at the London Hospital Medical College. Dr. Ellis, during 1909-1910, was resident pathologist of the Lakeside Hospital, Cleveland, and demonstrator of pathology in the Western Reserve University School of Medicine, Cleveland. From 1911 to 1914 he was assistant physician to the Hospital of the Rockefeller Institute, New York. He served throughout the World War, being in charge of the cerebrospinal fever hospital at Bulford in 1915, and then went to France with the First Canadian Division. In 1918, he was appointed adviser in pathology to the fourth army.——At the recent meeting of the senate of the University of London, the resignation of Prof. Harry R. Kenwood of the Chadwick Chair of Hygiene at University College, London, was accepted, effective in December.——Prof. T. Irisawa, of the Tokyo Imperial University Medical College, has been appointed chief court physician in the imperial household to succeed Dr. T. Ikeda, who resigned.——Yun Chi Hyong, who recently received the degree of doctor of medicine from the Kyushu Imperial University, is the first Korean to have that degree conferred by the Japanese government.——Prof. W. Ostwald, of the chair of colloid chemistry in relation to biology at the University of Leipzig, has been delivering a course of lectures at the Institute of Applied Chemistry at Barcelona. He is the founder of the German Colloid Chemistry Society and of its official organ, and was instructor at the University of California a few years ago.——The city of Warsaw is said to have conferred on Madame Curie, Paris, the title of "citizen emeritus."——The French Balzac prize has been conferred on Dr. P. Lucchini for his novel "Notre Dame de Sagesse." He practiced in Corsica before devoting himself to literature under the pseudonym of Pierre Dominique.——A tablet was placed by the city authorities on the street and on the house occupied by Dr. E. Gonzalez Serrano of Colmenar, Spain, and a souvenir volume was presented to him by the organized profession in celebration of his fifty-third anniversary of practice in that locality. The ceremonies concluded with a banquet.——The Alvarenga prize has been conferred by the Academia das Sciencias at Lisbon on Dr. Vasco Palmeirim for his monograph on "Shock." The *Medicina Contemporanea* states that although this prize was founded years ago, it has been awarded only once before.——Dr. José Blanc, Madrid, president of the Colegio de Médicos of central Spain, has left for a trip to South America.

Deaths in Other Countries

Edmund Moody Smith, medical officer of health for the State of York, July 23, aged 60.——**William Arnold Evans,** medical officer of health for Bradford from 1890 until 1912, July 7, aged 62.——Dr. **Henry Parent,** formerly president of the Ophthalmologic Society of Paris, recently, aged 75.——**George H. Oliver,** Bradford, England, formerly lecturer in ophthalmology, University of Oxford, April 14, aged 63.——**Michael Mohr,** associate professor in the University of Budapest, recently.——**Thomas David Lister,** advisory physician to the National Sanatorium Association, and author of books on industrial tuberculosis and sanatoriums, July 30, aged 55.——Dr. **Jorge E. Delgado,** professor at the medical school at Medellin, Colombia, member of the legislature at different times and secretary of state during the Concha administration.——Dr. **W. Helferich,** Munich, chief of the military hospital service.——Dr. **Paul Savnik,** director of the dermatologic clinic at Agram, formerly assistant at the skin clinic at Innsbruck and at Prague.

Government Services

Final Decentralization Step in Veterans' Bureau

A general order signed by the director of the U. S. Veterans' Bureau provides for the establishment of fifty-one regional offices in centers where the bureau's activities are greatest. This is the final decentralization step in the government's program of aiding disabled World War veterans. These regional offices will conduct the bureau's business in the territory for which they are designated and shall have the following powers, subject to the regulations of the bureau and to the final action of the director:

1. Examining of claimants and beneficiaries; the making of medical ratings and awarding of compensation claims. 2. Granting of vocational training; supervision of training and securing employment opportunities. 3. Granting of medical, surgical, dental, hospital care, convalescent care and necessary and reasonable after-care. 4. When specifically authorized, making payments for compensation, training allowance and for administrative expenditures.

Each regional office will be in charge of a regional manager who will be responsible to the director of the Veterans' Bureau. It will comprise a medical, claims, rehabilitation, and a service division. There will also be an employment section, a follow-up nursing service, supply section, and other administrative offices. The chiefs of divisions for the regional offices and the members of the claims and rating boards and other personnel will be designated by the regional managers and confirmed by the director of the bureau. Regional offices will be established in the following cities:

Boston	Charlotte, N. C.	Minneapolis
Portland, Maine	Columbia, S. C.	Helena, Mont.
Manchester, N. H.	Nashville, Tenn.	Fargo, N. D.
Providence, R. I.	New Orleans	Sioux Falls, S. D.
Burlington, Vt.	Birmingham, Ala.	Denver
New York City	Jackson, Miss.	Albuquerque, N. M.
Buffalo	Cincinnati	Salt Lake City
Hartford, Conn.	Cleveland	Casper, Wyo.
Newark, N. J.	Indianapolis	San Francisco
Philadelphia	Louisville, Ky.	Los Angeles
Pittsburgh	Chicago	Phoenix, Ariz.
Washington, D. C.	Detroit	Seattle
Baltimore	Milwaukee	Boise, Idaho
Richmond, Va.	St. Louis	Portland, Ore.
Charleston, W. Va.	Kansas City, Mo.	Dallas, Texas
Atlanta, Ga.	Des Moines, Iowa	Little Rock, Ark.
Jacksonville, Fla.	Omaha	Oklahoma City

The following territorial possessions will continue to be under the direct supervision of the central office: Philippine Islands, Virgin Islands, Porto Rico, Guam, Hawaii, Samoa and Panama Canal Zone.

Quarantine for Airship

At the request of the Navy Department, the medical officer in charge, U. S. Quarantine Station, Rosebank, Staten Island, N. Y., has been directed to designate a medical officer of his station to proceed to Lakehurst, N. J., for the purpose of performing quarantine inspection of the passengers and crew of the Rigid Airship ZR-3 on its arrival from Germany.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Aug. 8, 1924.

Twin Births

Recently Professor Cristalli of Naples called attention to the surprising increase in the number of multiple births occurring at Naples during and since the war. Is this phenomenon sporadic, or at least confined to the Italian peninsula; or is it, as Cristalli seems to suppose, a general finding observed in all the countries that took part in the World War? Dr. P. Balard, obstetrician to the hospitals of Bordeaux, has endeavored to establish the truth with reference to that city by collecting statistics on the number of twin births that have occurred there during the last ten years.

Twin Births Occurring in Bordeaux, 1913-1923

Years	Twin Births	Total Births	Twin Births per 1,000 Births
1913	7	4,201	1.66
1914	22	4,130	5.32
1915	17	3,179	5.34
1916	23	3,019	7.61
1917	22	3,711	5.92
1918	18	3,915	4.59
1919	26	4,092	6.35
1920	39	5,944	6.56
1921	37	5,655	6.54
1922	32	5,021	6.37
1923	37	4,875	7.58

It will be seen that at Bordeaux, except for the year 1913, there were, quite regularly, around six twin births per thousand births. At Naples, however, the proportion, which was about three before the war, rose steadily to 8, 9, 12, 17, 26 and 29 per thousand births.

To what cause or causes may this difference be ascribed? In explanation of the remarkable increase in the number of twin births at Naples, Cristalli refers to the changes in the family life during and after the war: the privations to which the women were subjected; the different nature of the food, with its progressive and lasting reaction on organic metabolism, since it is an established fact that the birth rate is in inverse proportion to the degree of well-being that characterizes a given social group, as if Nature tended to reestablish the demographic equilibrium and to preserve the race among poor people with an unusually high infant mortality. It may well be asked to what extent this interpretation seems to hold good. Balard notes that, in Cristalli's statistics, it is especially since 1918, and particularly in 1920 and 1921, that the number of twin births is exceptionally high. It would seem that by that time the influence of war restrictions would have ceased to be felt. Cristalli takes no account of the possible influence of syphilis on twin births. Leaving this factor out of account, it would seem, if we accept the theory advanced by Cristalli, that the twin births must have remained practically stationary in most parts of France as they did at Bordeaux, for at no time during the war did French women have to undergo such food privations as would have any appreciable effect on their metabolism.

A Psychopathologic Novel

Henri Béraud, who, in 1922, was accorded the Goncourt prize for his novel, "Le martyre de l'obèse," has published recently another novel entitled, "Lazare," in which the principal character, Jean Mourin, is the victim of double personality, which developed as the result of a violent traumatism. Lazarus is an appropriate name for the hero, since he is himself in the nature of a resuscitation. Jean Mourin, after a terrible accident, awakes to find himself an entirely different personality from his former ego. He lives in this state of mind in a sanatorium for a period of sixteen years. The accident occurred in 1906. In 1922, Jean Mourin suddenly recovers consciousness of his former self. He has no recollection of his life during the sixteen years spent in the sanatorium. He is informed that, during his disease, his double or second ego learned the tailor's trade, serving as an apprentice to a master tailor. But Mourin, now that he has recovered, does not know even how to hold a needle. His double, on the other hand, was unable to play the piano, although, before the accident, Mourin had been a professional pianist. Immediately on his recovery, after sixteen years during which he had not so much as touched the keys, he finds that his musical knowledge is undiminished and his skill unimpaired.

This novel has given rise to a medicoliterary controversy. Dr. Bérillon, a professor in the Ecole de psychologie, who was interviewed by a journalist on the subject of this novel, stated that such a case of double personality could not occur; especially if the subject was of pure racial stock. Bérillon admitted, however that the offspring of a white man and a negress, or of a male Eskimo and a woman of the yellow race, for example (and thus the issue of two distinctly different types, from the standpoint of physical features and mentality) might, under the influence of a violent shock, either mental or physical, come to feel more distinctly the instincts and tastes of one of the two constituent types, to the detriment or suppression of the instincts and tastes of the other type. In reply to this interview, Béraud contended that the case of Jean Mourin is scientifically possible, and referred, in support of his view, to the writings of certain specialists, mentioning, more particularly, Bechterew by name. But I do not know that it is necessary that a romanticist should justify all his conceptions. Perhaps it is sufficient if his novels are only interesting.

Canadian Students at Paris

Three hundred men and women students, who are making a study tour of Europe, spent a short time in Paris, where they were received by a delegation of the Association générale des étudiants and representatives of the "Bienvenue française."

BELGIUM

(From Our Regular Correspondent)

Aug. 6, 1924.

Evacuation of Sick and Wounded by Aeroplane

Chief Physician Picqué of the French army, and professor at the Faculté de médecine of Bordeaux, gave exhibitions recently at Brussels and at Liége of the use of aeroplanes for the transportation of the sick and wounded, which service has been especially helpful in Morocco and in the Levant. In Morocco alone, more than 2,000 wounded have been evacuated by the air route from Haut Atlas to the coast hospitals, and in the region of Bordeaux, the organization of evacuation by airship was beginning to be carried out for the more distant garrisons. From the standpoint of comfort, ease of transportation and rapidity, no other method can equal that of the aeroplane. The interior of the cabin is equipped with stretchers, electrically heated coverlets, boilers and reserves of oxygen for those who have chest wounds.

Perineal Prostatectomy

Before the Société belge d'urologie, Dr. Lemoine recently entered a plea for perineal prostatectomy. He contends that this operation has been unjustly discarded, and he cites all the indications in certain special cases, notably in the cases of tumors that develop exclusively around the canal or in

the subcervical or the subtrigonal region but leave the internal sphincter of the bladder unembarrassed.

From the technical standpoint, Dr. Lemoine employs the method of Young, which thus far has failed to cause him the vexations reported by others. On the contrary, this operation has permitted him to operate with success and without the least operative shock in cases in which the patients presented an elimination of phenolsulphonephthalein below 10 per cent. in two hours and had undergone previously a prolonged drainage through cystostomy.

A Special Diploma for Medical Specialists

The much discussed question as to whether or not a special diploma should be established which prospective specialists would be required to secure before assuming the title of "specialist" in any field (a proposition that M. De Beule so brilliantly defended before the Academy of Medicine) has been the subject of investigation by a commission composed of members of the Academy of Medicine. This commission has now reported unfavorably to the plan, as will be seen from these two resolutions: 1. The commission decides anew that it is not advisable to establish, in addition to the present legal requirements for a medical diploma, an obligatory examination for the practice of specialties. 2. The commission suggests, however, the creation of a council of the order of physicians.

This decision, which does not accord with the views of Dr. De Beule, is likewise opposed to the opinion expressed by the Conseil de perfectionnement de l'enseignement supérieur. This organization had demanded the establishment in the Facultés de médecine of a special medical diploma, attesting that the holder possesses the ability and the necessary preparation to practice a given specialty.

Medical Inspection of Schools

The very young society Association des médecins hygiénistes de Belgique, the establishment of which I mentioned in a recent letter, has already given evidence of great vitality. It has taken on itself the task of criticizing the law of 1914 by which medical inspection of schools was inaugurated. Dr. Charbonnier has endeavored to show that the medical inspection of schools should be extended to private schools of all kinds. The children of the bourgeoisie need medical inspection just as much as the children who attend the free public schools. In the districts in which medical inspection has been introduced in the private schools, the results secured are proof of the foregoing contention, for the proportion of interventions resulting from the examination for adenoid growths, hypertrophy of the tonsils, defective hearing and vision, hernia, phimosis, varicocele, etc., is the same as in the free schools. The society is making a special study of the question, and, when this is finished, it plans to draw up a resolution to be submitted to the government authorities.

Plans for the Organization of a Society of Otology, Rhinology, Neurology, Ophthalmology and Neurosurgery

July 12, 1924, a number of Belgian physicians met at Brussels to consider plans for the foundation of a society of otology, rhinology, neurology, ophthalmology and neurosurgery. It is planned to establish between these various departments of medicine such a connecting link as the complexity of their several disciplines demands. The members of the temporary committee are: for surgery, Drs. De Beule (Ghent) and Christophe (Liége); neurology, Drs. De Craene (Brussels), Rodolphe Ley (Brussels), and L. Van Bogaert (Antwerp); ophthalmology, Drs. H. Coppez (Brussels) and Weekers (Liége); otorhinolaryngology, Drs. Buys (Brussels) and Hennebert (Brussels).

The French Association for the Advancement of Science

The influential Association française pour l'avancement des sciences will hold its annual congress this year at Liége. At this meeting the University of Liége will confer on M. Poincaré and M. Regaud an honorary degree. The congress consists of twenty-four sections dealing with the various mathematical, natural, medical, biologic, geographic, political and applied sciences. Five sections deal with medicine; namely, zoology and anatomy, the medicosurgical sciences, odontology, roentgenology and social medicine.

VIENNA

(From Our Regular Correspondent)

Aug. 18, 1924.

Health Statistics for the First Half of 1924

The year 1924 shows in its first six months a decided improvement, in regard both to morbidity and to mortality, over its predecessor. The number of cases of infectious diseases has been constantly below the corresponding figures of last year, especially with regard to influenza and diphtheria, while scarlet fever and whooping cough are nearly as frequent. The number of deaths is 0.5 per cent. lower, being on an average 105 daily. The relative frequency of deaths, considered from the standpoint of etiology, has remained stationary. Tuberculosis and diseases of the circulatory system claim the most victims, but it is a fact that the former prevalence of tuberculosis in mortality tables is now going down constantly, and in certain months (May-June) it is surpassed by the other condition mentioned. The explanation is offered that all seriously ill with tuberculosis died during the war and in the five years of starvation following it, so that only the lightly infected are now left to die. Cancer is more frequently diagnosed than five years ago, perhaps because of the better opportunities of recognizing it, while cholera, typhus and smallpox hardly ever appear in the statistics. Dysentery was fatal in eleven cases, and epidemic meningitis in three.

Alcohol and Juveniles

The antialcohol movement is not very successful among adults in our country, partly owing to lack of funds for conducting a powerful campaign, partly because the really deciding factors have little or no interest in promoting its aims. On the contrary, the "pro-alcoholists" have organized a system of lectures to show that moderate consumption of alcoholic beverages is in no way harmful to the human race, but is apt to produce an improvement in mentality and good-naturedness. "Poems, jokes, songs and music thrive especially where the mind is somewhat 'brightened' by a dash of alcohol." Nevertheless, the police reports in Vienna should not be overlooked in this respect. In the month of May alone, the number of juveniles who had to be locked up for being drunk or disorderly on the streets (125) was four times that of the previous month. They were 5 per cent. of all persons dealt with on account of drunkenness. Only 3 per cent. of the juveniles were girls (from 16 to 18 years). The antialcohol society of this city, which is assisted by the endeavors of the municipality, has introduced antialcohol teaching in the schools for apprentices, the evening schools for laborers and office girls, and the higher schools. Lately the "scout" movement has been extensively propagated in this country, and its health-giving aims have found much favor in the lower classes of the population. One of the chief postulates of all "scouting" is absolute abstinence from alcohol.

Statistics of War Invalids and Cripples

The Municipal Board of Invalids has published a report covering the entire work done by that department in 1923.

The board has been called on to assist 38,895 invalids, or more than double the number of the previous year. The war invalids are mostly chronically incapacitated; their complaints and conditions of health are getting worse every year, and the loss of light work—increase of unemployment in the country—naturally throws an extra burden on the board instituted to aid and assist them. Of the applicants, 3,565 were found to require hospital treatment as inpatients, while 2,396 could be treated in outpatient departments or dispensaries. Of the total figure of 5,961, no less than 834 had to be directed to surgical wards, and 4,080 to medical treatment. While in 1922, the ratio of inpatients to outpatients was 71:29, in 1923 it was 60:40. This proves that gradually the really severe cases are disappearing through death, while the surviving invalids can be treated more or less "conservatively." Of the patients admitted to the hospital wards—only special war-invalid hospitals are entrusted with their care—42 per cent. were suffering from tuberculosis or various kinds; 6 per cent. from circulatory troubles; 13 per cent. from diseases of the central or peripheral nervous system; 8 per cent. from rheumatic conditions; 18 per cent. from results of trauma; 1 per cent. from malaria and its effects, and 0.1 per cent. from venereal diseases, while 2.5 per cent. had eye troubles. As regards the extent of invalidity, 10 per cent. were classified below 25 per cent. of invalidity, and 31 per cent. above 50 per cent. of invalidity. The first group does not get any financial assistance besides free treatment and medicine; the last group gets a pension amounting to from 70 to 100 per cent. of a laborer's earnings. Eight hundred and fifty-nine invalids died in 1923, at least 60 per cent. of whom had been incapacitated as the result of war wounds. Tuberculosis carried off 50 per cent.; other pulmonary trouble, 6 per cent.; diseases of the circulatory system, 13 per cent.; kidney trouble, 4 per cent.; diseases of the brain and nervous system, 8 per cent.; disorders of the alimentary canal, 2 per cent. Six per cent. succumbed to neoplastic growths, and 2 per cent. committed suicide. Of the tuberculous lesions proving fatal, 93 per cent. were situated in the lungs, 4 per cent. in the brain, and the remainder in the bones or the intestines. Eighteen per cent. of persons dying were between 20 and 30 years old; 31 per cent., from 30 to 40; 40 per cent., from 40 to 50, and 11 per cent. over 50. Only 8 per cent. of them had been classified as having disability 25 per cent. and an equal number as between 25 per cent. and 55 per cent. In 114 cases, the Board of Invalids had to renew prosthetic appliances, or procure new apparatus for the applicants, besides five telephonic or acoustic appliances for the deaf.

The Incidence of Congenital Syphilis in Austria

In the regular reports published by the Austrian ministry for social welfare, Dr. Hochsinger deals with the problem of congenital syphilis, as appearing in an examination of 145,290 new-born babies and those examined in the three years 1919-1921. Before 1914, and in the first four years of the war, the same author has examined or received reports of 123,284 new-born and infants, and had come to the conclusion that the percentage of congenital syphilis in this age group was fairly constant before the war, and had dropped markedly in the war years. Dr. Hochsinger explained the diminished proportion by the fact that a large percentage of the male population was under arms and either received an intensive treatment of their old syphilis, or in case of freshly acquired disease, was subjected to intensive treatment—the combined mercury-arsphenamin method. The result was the birth of more healthy children than formerly. After the war, however, this intensive treatment could not be given. In the investigation by Dr. Hochsinger, only those cases were regarded as positive in which there were present manifest signs of congenital syphilis or the fetus was macerated. No Wassermann reaction was made, as it is not absolutely reliable in that respect. For the sake of comparison, only those institutions were chosen that had reported for the years 1911-1914, 1915-1918 and 1919-1921. In one institute in peace time, 2.54 per cent. of 3,064 babies had congenital syphilis; in war time, the figure had dropped to just 1 per cent. In the last triennium it remained about equal. In a second institute, it stood before the war at 1.17 per cent., in the later period 0.7 per cent. In the gynecologic and obstetric clinics, however, one sees an increase of the "syphilitic index" after the war. It stood at 1.87 per cent. until the year 1914; dropped to 1.4 during the war, and is now at 2.35 per cent., or the highest figure in ten years. The highest figure ever reached in a Vienna institute before the war was 1.98 per cent.

It is interesting to note that of the syphilitic offspring 88 per cent. were born dead, and 12 per cent. born living, while the last year considered (1921) shows 83 per cent. dead and 17 per cent. living children, or a slight qualitative improvement. In the provincial institutions, especially in the larger cities of Graz, Innsbruck, Linz, Salzburg and Klagenfurt, we find a decided increase of the relative frequency of syphilitic offspring. In Linz, for instance, it was 0.9 per cent. before the war, 0.88 per cent. during the war; but it leaps suddenly to 2.46 per cent. in 1920. In Salzburg, it rose from 1.7 per cent. to 2.1 per cent. In Klagenfurt (southern Austria) the percentage was 2.15 per cent. before the war, dropped to 1.45 per cent., and went up to 4 per cent. on an average. (It reached 5.74 per cent. in 1920.)

Details of the figures used for compiling this comparative study may be mentioned. In nineteen different maternity institutes, 55,878 children were born in the period from 1919 to 1924, with 654 syphilitic offspring (2.1 per cent.). Maceration took place in 1 per cent. of all births on an average, with 1.4 per cent. in 1920 as the maximum. In children's hospitals, 3,592 infants were admitted in 1919, with 2.2 per cent. syphilitic patients; in 1920, 5,233, with 2 per cent. syphilitic; in 1921, 4,743 babies, with 4.15 per cent. syphilitic cases. In the outpatient department, the figures for the years 1919, 1920 and 1921 were: 22,609 infants (0.8 per cent. syphilitic); 24,185 (0.9 per cent.), and 29,150 (0.8 per cent.). Thus, in concluding, Dr. Hochsinger says that the diminished ratio of syphilitic offspring, manifested during the war, is rising constantly and has reached an increase of 25 per cent. in the maternity wards, while, during the last year under consideration, it reached the highest figure noted in eleven years.

Marriages

WILLIAM HENRY MCMAHON to Miss Alberta Marie Comstock, both of Norwalk, Conn., August 12.

WILLIAM E. DELANEY, JR., Williamsport, Pa., to Miss Alice McMullen of Cumberland, Md., June 18.

EDMUND A. W. SCHOLTER, Milwaukee, to Miss Irene Rose Brielmaier of River Falls, Wis., July 5.

WILLIAM WAGNER, Cleveland, Wis., to Miss Lillian Margaret Anglin of Oshkosh, July 8.

CHARLES RYAN, Des Moines, Iowa, to Miss Esther Justensen of Pine City, Minn., July 12.

M. GREGORY CHADMAN, Lancaster, Pa., to Miss Margaret Noel of Philadelphia, May 28.

MARTIN WERRA, Waukesha, Wis., to Miss Elsie D. Dudenhoefer of Milwaukee, June 28.

JONATHAN K. JAMES, Delaware, Ohio, to Miss Mary Betty Bond of Dayton, August 9.

HAROLD HAMNETT to Miss Mary Kathleen Kopp, both of Princeton, Ill., August 2.

PAUL FORGAVE, St. Joseph, Mo., to Miss Ellen Classen of Cleveland, June 31.

Deaths

Walter Willis Rosser ⊕ Muskogee, Okla.; Vanderbilt University Medical Department, Nashville, Tenn., 1898; member of the Medical Association of the State of Alabama; served in the Spanish-American and World wars; formerly a contract surgeon in the British army; for four years surgeon to the Rand Consolidated Gold Mines, Johannesburg, South Africa; chief of the tuberculosis section of the U. S. Veterans' Hospital No. 90; aged 48; died, August 15, at Stevenson, Ala., of heart disease.

John Timothy Geraghty ⊕ Baltimore; Johns Hopkins University Medical Department, Baltimore, 1903; member of the American Urological Association, and the American Association of Genito-Urinary Surgeons; associate professor of clinical urology at his alma mater; aged 48; died, August 17, at the Johns Hopkins Hospital.

S. Marion Steele, Ingram Branch, W. Va.; College of Physicians and Surgeons, Baltimore, 1886; member of the West Virginia State Medical Association; formerly mayor of Moundsville; at one time superintendent of the Weston State Hospital, Weston; aged 65; died suddenly, August 11.

Leonard Francis Hatch ⊕ Vineland, N. J.; University of Michigan Medical School, Ann Arbor, 1887; formerly professor of surgery at the College of Physicians and Surgeons, Boston; served in the M. C., U. S. Army, during the World War; aged 60; died, June 7, of aortic aneurysm.

Joseph Smith Jones, Columbus, Ohio; Starling Medical College, Columbus, 1898; member of the Ohio State Medical Association; formerly assistant professor of therapeutics at the Ohio State University College of Medicine, Columbus; aged 51; died, August 11, of angina pectoris.

Jabez Sparks Parker, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1897; member of the Medical Society of the State of Pennsylvania; aged 55; died suddenly, August 11, near Point Pleasant, Pa., of heart disease.

Christopher Sheppard ⊕ Ontario, Calif.; Victoria University Medical Department, Toronto, Ont., Canada, 1890; formerly health officer of Ontario; aged 70; died suddenly, August 12, of heart disease.

Mary Krom, Winterton, N. Y.; Denver (Colo.) College of Medicine, 1893; member of the Medical Society of the State of New York; aged 70; died, June 28, at Princeville, of carcinoma of the stomach.

William H. Parker, Red Ash, Ky.; University of Louisville School of Medicine, 1890; member of the Kentucky State Medical Association; aged 73; died, June 3, at Burgin, of cerebral hemorrhage.

Bertha T. Caldwell, Johnstown, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1893; aged 56; died, August 10, at the Memorial Maternity Hospital, of injuries received in a fall.

Joseph R. Puryear, Lebanon, Tenn.; Vanderbilt University Medical Department, Nashville, 1881; member of the Tennessee State Medical Association; aged 64; died, May 5, of chronic nephritis.

Francis A. Neville ⊕ Meredosia, Ill.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1887; aged 63; died suddenly, in August, of heart disease.

Samuel S. Simpson, Clarendon, Va.; College of Physicians and Surgeons, Baltimore, 1885; member of the Medical Society of Virginia; aged 61; died, May 14, of cirrhosis of the liver.

Joseph Thomas Davis, North Emporia, Va.; University College of Medicine, Richmond, 1903; member of the Medical Society of Virginia; aged 50; died, July 7, of cirrhosis of the liver.

Frank T. Briggs ⊕ Bristol, Vt.; Baltimore (Md.) Medical College, 1897; aged 58; died, June 28, at the Mary Fletcher Hospital, Burlington, as a result of a carbuncle and diabetes mellitus.

John Coulter Russell, Warren, Pa.; Western Reserve University School of Medicine, Cleveland, 1884; member of the Medical Society of the State of Pennsylvania; aged 65; died, July 23.

Alonzo Lyons McNeill, Epworth, Iowa; Chicago (Ill.) Homeopathic Medical College, 1895; member of the Iowa State Medical Society; aged 67; died, August 10, of heart disease.

David Preston Wysong, Port Washington, N. Y.; Washington University School of Medicine, Baltimore, 1872; aged 71; died, June 25, at Camden, Maine, of angina pectoris.

Franklin T. Johnson, Jr., Burns, Kan.; Kansas City (Mo.) Medical College, 1904; aged 45; was killed, August 8, when the automobile in which he was driving overturned.

Louis Domhoff, Cincinnati; Medical College of Ohio, Cincinnati, 1894; member of the Ohio State Medical Association; aged 56; died, August 5, following a long illness.

Oliver Milham, Bridgman, Mich.; St. Louis (Mo.) Medical College, 1874; aged 84; died, May 9, at the Mercy Hospital, Benton Harbor, of chronic interstitial nephritis.

Hiram Carson Aurand, Bellevue, Ohio; Kentucky School of Medicine, Louisville, 1892; formerly mayor of Bellevue; aged 58; died, August 12, at Cleveland.

James Arthur Lyttle, Bolivar, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1892; aged 64; died, July 6, at Burns, of cerebral hemorrhage.

Thomas Franklin Hamilton, Greybull, Wyo.; John A. Creighton Medical College, Omaha, Neb., 1917; aged 39; died, June 6, of a gunshot wound.

John M. Milton, Packton, La.; University of Georgia Medical Department, Augusta, 1877; aged 73; died, June 15, at the Charity Hospital, Shreveport.

George Henry Dowsey ⊕ Great Neck, N. Y.; Medical Department of the University of the City of New York, 1892; aged 59; died, August 13.

J. Frank Merritt, Jr., Blue Mountain, Miss.; University of the South Medical Department, Sewanee, Tenn., 1900; aged 48; died, May 20, of pneumonia.

Luther Bassett Kline ⊕ Catawissa, Pa.; Jefferson Medical College of Philadelphia, 1867; aged 81; died, August 5, at the Bloomsburg (Pa.) Hospital.

William Kirkpatrick Andrews ⊕ Mill Village, Pa.; Medical Department of the University of the City of New York, 1889; aged 57; died, August 5.

Thomas H. Pawling ⊕ Avoca, N. Y.; University of Buffalo Department of Medicine, 1884; aged 67; died, August 4, following a long illness.

Robert F. McReynolds, Knox City, Mo.; St. Louis Medical College, 1874; formerly member of the state legislature; aged 70; died, August 15.

Jeremiah J. Sullivan ⊕ Dunkirk, N. Y.; University of Buffalo Department of Medicine, 1887; aged 62; died, July 27, of heart disease.

Joel Cooperrider, Brownsville, Ohio; Medical College of Ohio, Cincinnati, 1876; aged 74; died, August 5, at Santa Fe, N. M., of neuritis.

Richard K. Ferguson, Miles, Texas; Memphis (Tenn.) Hospital Medical College, 1890; aged 65; died, July 23, of cerebral hemorrhage.

Silas Ballard, Coleman, Texas; Memphis (Tenn.) Hospital Medical College, 1894; aged 58; died, July 16, of a gunshot wound.

John Kendrick Castleberry, Nacogdoches, Texas; Gate City Medical College, Texarkana, 1904; aged 43; died, July 15, of septicemia.

George W. Plimell, Science Hill, Ky.; Eclectic Medical Institute, Cincinnati, 1877; Civil War veteran; aged 84; died, August 3.

Hugh Louis Sanders ⊕ Logansport, La.; University of Nashville (Tenn.) Medical Department, 1903; aged 49; died, August 4.

John McDaniel Blair, Trevat, Texas (licensed, Texas, under the act of 1907); aged 69; died, June 10, of osteocarcinoma.

Roxie Ellen Bates, Morenci, Mich.; University of Michigan Medical School, Ann Arbor, 1887; aged 68; died, August 6.

Fredd Orlando Pryor ⊕ Santa Rosa, Calif.; Cooper Medical College, San Francisco, 1898; aged 53; died, July 3.

William E. Dignen ⊕ Buffalo; University of Buffalo Department of Medicine, 1891; aged 60; died, July 9.

Henry F. Hudson, Greenfield, Tenn.; Louisville (Ky.) Medical College, 1873; aged 77; died, June 30.

L. J. Thomas, Dublin, Ga.; Atlanta Medical College, 1882; aged 85; died, May 19, of senility.

George W. Hill, Cave-in-Rock, Ill. (licensed, years of practice); aged 74; died, July 24.

⊕ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

BIOFOOD

A Worthless Nostrum Exploited Under Pernicious Claims

"BioFood" is a "patent medicine" combination put out by a concern that seems to go under various names: "Biochemical Food Products Corporation," "Bio-Products Company" and "BioFood Corporation." The Biochemical Food Products Corporation was incorporated in Illinois, Oct. 7, 1920. The incorporators are given as Eugen Kuhne, S. Ashley Guthrie and Benj. H. Weisbrod, the two latter being lawyers. On Aug. 30, 1922, the name was changed to BioFood Corporation.

Eugen Kuhne, who is said to have been a contracting engineer and therefore competent to go into the "patent medicine" business, seems to be the president, treasurer and manager of the concern. One Joseph M. Pierce, whose qualifications to sell medicaments seemed to rest on his previous experience in the meat business, was the vice president but was succeeded later by John E. Kilker, formerly a BioFood salesman.

BioFood has been shrewdly and cleverly marketed. The psychic claptrap of the "patent medicine" faker has been used to good advantage. The name itself, "BioFood," may be counted on to disarm the newspaper publisher who might bar from his pages "patent medicine" advertisements. The impression is given that the stuff is a "food," and not a medicine. The physical layout is equally clever. BioFood is sold at a high price—$10.00 a "treatment"—which in itself can be counted on to impress the public with its value. The "treatment" consists of a box labeled "A" and two bottles labeled, respectively, "B" and "C." "BioFood A" consists of large tablets, resembling in general appearance the tablets of malted milk put up by various manufacturers. "BioFood B" also consists of tablets but smaller in size. "BioFood C" is a 5-ounce bottle of a dark brown liquid with an aromatic odor. "BioFood A" is claimed to contain "Sodium, Calcium, Iron, Manganese, Silicon, Carbon, Potassium, Magnesium, Lactophosphates, Glycerophosphates, With Lactose, Cocoa, and Charcoal as Filler." "BioFood B" is labeled as containing "a combination of chemicals among which are sodium, citrate, sulphate, lithium glycerophosphate and potassium sulphate." "BioFood C," the liquid, according to the label, "contains, among other ingredients, ammonium carbonate, magnesium glycerophosphate, iron glycerophosphate, calcium, sodium and manganese." As no quantities are given on any of the labels the alleged formulas are obviously meaningless.

The BioFood "Treatment"—price $10.00, not worth 10 cents.

THE BIOFOOD THEORY

In the exploitation of BioFood a thesis is put forward that reminds one of the dictums on which cults are founded; in fact, the BioFood exploiters seem to use as a basis the fantastic theory of Schussler and his so-called bio-chemic treatment by means of "twelve tissue remedies." The BioFood theory may be briefly stated thus:

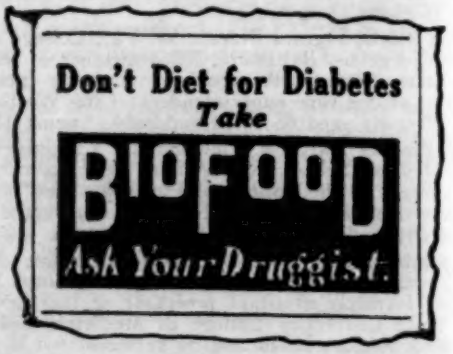
(1) Our bodies are composed of twelve tissues containing sixteen elements.

(2) The same sixteen elements are found in virgin soil which has not been subjected to intensive cultivation.

(3) The soil today, because of intensive cultivation and the use of commercial fertilizer is deficient in many of these elements, therefore, our foods are deficient in the elements necessary to keep our bodies fit. Furthermore, we still further devitalize foods in preparing them for consumption.

(4) BioFood contains all the elements in which modern soil and food is deficient and thus "builds up the body by supplying all the elements which nature intended man to have and thus gives nature a chance to create her own antitoxins and effect a cure."

This, then, is the theory on which the exploitation of BioFood is based. The claim that, because of soil deficiency, the natural foods of today are lacking in certain essential elements necessary to health has no foundation in fact. It is



One of the viciously cruel slogans of the BioFood fakery. This advertisement ran in newspapers and street cars.

true—in fact a platitude—that some of our *prepared* foods are over-refined and "devitalized." But the idea of overcoming the deficiency of certain elements in over-refined foods, by taking pills, powders or liquids alleged to contain the deficient elements is unsound and absurd.

The ignorance of the BioFood people is evidenced in other parts of their "literature." We read, for instance:

"Normal untreated cereals when placed in a warm moist atmosphere will create worms. These worms do not attack the flour from the outside but are chemically created within."

That worms can be spontaneously generated in decaying cereals is an idea that would be laughable if one could forget that many people believe that similar forms of life ("vinegar eels," cheese maggots, etc.) are created *de novo*. Here is more BioFood biology:

"Every living body whether human or animal, resists worms as long as its chemistry is perfect. There is no death. Chemistry continues even in supposedly dead bodies and creates worms and maggots."

That such preposterous nonsense can be put forward and accepted by the public is a sorry commentary on the present state of national intelligence.

WHAT BIOFOOD THINKS OF MEDICINE

Eugen Kuhne, who seems to be the leading spirit in the exploitation of BioFood, evidently has definite opinions of the medical profession in general and that of Chicago in particular. A Chicago physician who had made uncomplimentary remarks about BioFood received a letter from the concern in the course of which Kuhne said:

"While Chicago has many physicians, it cannot boast of but a small percentage who can be termed as belonging in the better class."

Kuhne's English may be a little weak, but his convictions seem strong. He then continued:

"Whenever a physician is open-minded, then I am always more than pleased to explain BioFood to him in the presence of his patient, and where I find a physician open-minded I never expose the gross ignorance of the average physician, but where I find a physician who himself accomplishes nothing but does not hesitate to condemn BioFood, there I am usually unmerciful and I put to such physician questions about hydrochloric acid, about amino-acids and usually succeed in less than five minutes' time to convince the patient that his or her physician is ignorant of the fundamentals of life and chemistry."

Thus would Kuhne, the ex-engineer, crush the poor medical man under a mass formation of technology on hydrochloric

and amino acids. Kuhne suggests that some physicians do not prescribe BioFood "because that would make their patients well and they would naturally lose their income." But in spite of Kuhne's poor opinion of physicians he seems to need them in his business and one of the pieces of BioFood advertising contains a long and fulsome puff of the "patent medicine" by Arthur Bremken, M.D. Apparently, Bremken was employed by the BioFood concern. In his testimonial Bremken states that since November, 1922, he had applied himself "very closely to the study of BioFood" and that he had been from early morning until late at night in the offices of the BioFood Corporation with access to their files, examining their patients and acquainting himself "with the underlying thought and method of the men in back of BioFood." After due study Dr. Bremken reaches the conclusion "that BioFood is the most logical, common sense and scientific method of treating the majority of diseases."

According to our records, Arthur Bremken was born in Europe in 1874 and was graduated in 1900 by the University of Illinois, College of Medicine. He was licensed in Illinois in 1901 and in Minnesota in 1910. Dr. Bremken seems to have practiced in Chicago for a short time after he was graduated. He then seems to have practiced for short periods at Spring Grove, Ill., Richmond, Ill., and Bronson, Minn. In 1912 he was at Pine River, Minn., where he seems to have stayed until 1922.

SOME PERNICIOUS ADVICE

The BioFood advertising campaign has been extensive—full-page advertisements in newspapers, half-page advertisements in prostituted self-styled medical journals and cruelly mendacious advertisements in the Chicago street cars. Of the latter there is one reading:

"DON'T DIET FOR DIABETES, TAKE BIOFOOD"

Whether the heartless disregard for human life expressed in this advertisement is the result of crass ignorance on the part of the BioFood concern or something worse makes little difference so far as its effect on the public is concerned. In addition to the display advertisements an elaborate follow-up series has been used to catch the potential victims that might answer some of the BioFood advertising.

A complete "treatment" of BioFood—price $10.00—was purchased and submitted to the A. M. A. Chemical Laboratory for analysis, although it was not expected that anything that the laboratory might find would make BioFood seem any more preposterous than it was made to seem by the claims put forth. An abstract of the laboratory report follows:[1]

LABORATORY REPORT

One box of "BioFood," distributed by the Biochemical Food Products Corporation, Chicago, was purchased from a local druggist, price $10.00. The box, a relatively large size, contained three smaller packages, labeled "BioFood A," "BioFood B" and "Biofood C," respectively.

BioFood A.—The box of "BioFood A" contained ninety tablets, each tablet occupying an individual cache in a "sanitape package." According to the label, "BioFood A" contains:

"Sodium, Calcium, Iron, Manganese, Silicon, Carbon, Potassium, Magnesium, Lactophosphates, Glycerophosphates with Lactose, Cocoa, and Charcoal as Filler. Free from Alcohol and Narcotics. Not habit-forming."

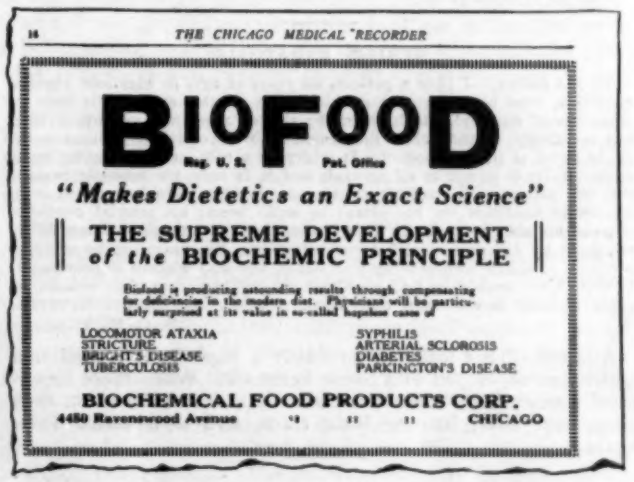
The average weight of the tablets was 1.65 Gm. (about 25 grs.). Qualitative tests confirmed the presence of the metallic elements claimed; tests were also positive for phosphate (PO_4), sugar, fat, and small amounts of chlorid, sulphate and carbonate. Alkaloids, iodids, and emodin-bearing (laxative) drugs were not found. Silicon, of course, could not be present as such, but there was present a large amount of substance insoluble when digested with sulphuric and nitric acids, having the properties of magnesium silicate (talc). From the qualitative and quantitative analyses made "BioFood A" may be considered to be composed essentially of milk sugar and flavoring in which has been incorporated small amounts of iron, calcium and manganese salts; and phosphate, either as such or in combination such as glycerophosphates. The amount of iron in one tablet would be .016 Gm. (¼ grain), the amount of manganese .002 Gm. (1/30 grain) and calcium .016 Gm. (¼ grain) and talc 0.2 Gm. (3 grains).

BioFood B.—The bottle of "BioFood B" contained thirty-one white tablets. According to the label:

"BioFood B contains a combination of chemicals, among which are sodium, citrate, sulphate, lithium glycerophosphates and potassium sulphate. These are the salts found in the most beneficial mineral springs. BioFood B is not a physic."

Each tablet weighed approxiamtely 0.75 Gm. (about 11½ grs.). Qualitative tests indicated the presence of sodium, potassium, acetate, chlorid and citrate. Phosphate and lithium were not found by use of delicate tests although the presence of these radicals is declared on the label. Calculating from the quantitative analysis made "BioFood B" may be considered to consist essentially of:

Potassium acetate	15 parts
Sodium chlorid	25 parts
Sodium sulphate	25 parts
Sodium citrate (anhydrous)	11 parts
(Equivalent to 13.8 U. S. P.)	
Moisture	11 parts
Excipient	13 parts
	100 parts


16 THE CHICAGO MEDICAL RECORDER
BIOFOOD
Reg. U. S. Pat. Office
"Makes Dietetics an Exact Science"
THE SUPREME DEVELOPMENT
of the BIOCHEMIC PRINCIPLE
Biofood is producing astounding results through compensating for deficiencies in the modern diet. Physicians will be particularly surprised at its value in so-called hopeless cases of
LOCOMOTOR ATAXIA
STRICTURE
BRIGHT'S DISEASE
TUBERCULOSIS
SYPHILIS
ARTERIAL SCLOROSIS
DIABETES
PARKINGTON'S DISEASE
BIOCHEMICAL FOOD PRODUCTS CORP.
4450 Ravenswood Avenue CHICAGO

Yes, BioFood was able to get its advertising accepted by medical journals—of a type that are a credit neither to medicine nor journalism.

For each tablet, this would be equivalent to potassium acetate 0.11 Gm. (1.7 grains); sodium chlorid 0.19 Gm. (2.9 grains) sodium sulphate 0.19 Gm. (2.9 grains) and sodium citrate U. S. P. 0.10 Gm. (1.5 grains).

BioFood C.—The bottle of "BioFood C" contained about 150 c.c. (5 fluid ounces) of a dark brown liquid having an aromatic odor. According to the label:

"BioFood C contains among other ingredients, ammonium carbonate, magnesium glycerophosphate, iron glycerophosphate, calcium, sodium and manganese. Free from alcohol and narcotics. Not habit-forming."

Qualitative tests indicated the presence of acetate, phosphate, trace of sulphate, trace of chlorid, calcium, iron, sodium and ammonium (NH_4). Sugar, alkaloids, iodids, manganese and carbonate were not found although the latter two are declared to be present, according to the label. Tests also indicated the presence of glycerin. The solution was acid to litmus. From quantitative estimations it is evident that "BioFood C" resembles Solution of Iron and Ammonium Acetate U. S. P. (Basham's Solution), modified by the addition of very small amounts of calcium, magnesium and sodium and phosphate compounds. The label claims the presence of ammonium carbonate and extols the virtue due to this product. Obviously ammonium carbonate "the anti-acid for various gastric disturbances" cannot be present as the product contains free acetic acid.

A CHANGING PHASE OF THE "PATENT MEDICINE" BUSINESS

How long will this piece of quackery continue? Just so long as the BioFood Corporation has money to spend on advertising and newspapers and street car companies are willing to share in the profits of quackery by accepting such advertising. The BioFood concern is merely one of many "patent medicine" exploiters that attempt to capitalize the

1. The complete report will appear in the Annual Reports of the A. M. A. Chemical Laboratory.

present interest in the newer findings in food studies. The forward-looking nostrum maker of today knows that his public can be more easily humbugged on the "food-tonic" scheme than by any other. All that is necessary is an extensive and intensive advertising campaign written in a plausible and, apparently, conservative tone. The well-to-do and more intelligent part of the public is particularly impressed by a scheme of this kind.

Newspapers that would turn down advertising contracts for "Lydia Pinkham's" or "Peruna" willingly publish advertisements of such pieces of quackery as "BioFood" represents. Thus does the "patent medicine" business adjust itself to changing conditions and the ever gullible public rise to new bait.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SENILE KERATOSIS

To the Editor:—I have a patient, 80 years of age, in excellent physical condition, who has a recurring skin lesion at the end of his nose of seven years' duration. It is about the size of a pea and nonsuppurating, but constantly reforms after the healed scab is accidentally wiped away, or drops off of its own accord. It is dry as a rule, or only slightly moist at intervals; it is not at all painful, and it is only for cosmetic reasons that the patient seeks treatment. He has no other skin lesion and is in wonderful condition for his years; he walks erect; his arterial condition is good, his skin very clear. This lesion has been cauterized many different times by different men, but without effect. Six years ago he received a course of thirty roentgen-ray treatments, but also without improvement. I have been unable to find anything in the literature that seemed to apply directly to this case, and would sincerely appreciate information.

B. O. B., Illinois.

ANSWER.—This lesion is probably a superficial epithelioma which has developed in a senile keratosis. When these superficial lesions have a diameter of only a few millimeters they often heal over, leaving little trace, and then break down again.

CHLORIN INHALATIONS

To the Editor:—Kindly give me your opinion on chlorin for the treatment of respiratory diseases.

D. R. KATHAN, M.D., Schenectady, N. Y.

To the Editor:—Will treatment with chlorin eliminate a chronic mucous nasal catarrh?

——, M.D., Chico, Calif.

ANSWER.—As expressed in an editorial comment published in THE JOURNAL last week, page 691, the indications are that chlorin inhalations will not produce bacterial sterilization of the mucous membranes, although they seem to reduce to a considerable extent the number of bacteria found on the tissues. The length of an adequate treatment, the optimal concentration of gas to be used and the method by which the gas is to be produced have not yet been thoroughly worked out. The method must therefore be considered as still in the experimental stage.

THE BAN ON HEROIN

To the Editor:—I am informed that the use of heroin, even on prescription, has been prohibited, to take effect sometime this year or when the present stocks of heroin in drug stores run out. If so, therapeutic nihilists have been allowed to have their way, in spite of all common sense, all sound medical teachings and years of experience. That heroin is a valuable drug is shown by its use by leading men in the profession in, for instance, postoperative cases. It allays peripheral and superficial wound pain without affecting peristalsis, as morphin does. In coughs, burns, etc., it is better than morphin, as it does not suppress kidney and skin functions. I have used heroin for twenty years and am convinced that there is no good substitute for it. I would like to continue to use it in the interest of my patients.

If I have been correctly informed as to the approaching discontinuance of the use of heroin, please inform me as to the best avenues through which I can make my experience and opinions known in the hope of preventing such ill advised action.

———, M.D., Iowa.

ANSWER.—As long ago as 1917, the Council on Pharmacy and Chemistry deleted heroin from its Handbook of Useful Drugs, saying: "The Council holds that heroin has no advantage over morphin; that it shares every disadvantage of morphin; and that, on the whole, its introduction has been harmful, in that it furnished a specious means on the one hand for avoiding the well founded popular fears of morphin by substituting another habit-forming drug." In 1920, the House of Delegates resolved, "That heroin be eliminated from all medicinal preparations; that it should not be administered, prescribed or dispensed; and that the importation, manufacture and sale of heroin should be prohibited in the United States." The advisability of discontinuing the importation of opium intended to be used for the manufacture of heroin was duly considered by the recent Congress, and the result was the enactment, June 7, 1924, of a bill prohibiting such importation. Subsequently, the federal Narcotic Control Board announced that it would not authorize the importation of any opium intended to replace opium or morphin thereafter converted into heroin, thus going beyond the letter of the law in an effort to carry out its spirit. This will prevent the open manufacture of heroin in the United States, and as none can be lawfully imported, heroin will soon disappear from the legitimate market.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 7-8. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.
DISTRICT OF COLUMBIA: Washington, Oct. 14. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.
FLORIDA: Tallahassee, Oct. 14-15. Sec., Dr. Wm. Rowlett, Citizens Bank Bldg., Tampa.
GEORGIA: Atlanta, Oct. 14-16. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 13-16. Sec., Dr. G. C. Milnor, 401 So. Beretania St., Honolulu.
IDAHO: Boise, Oct. 7. Dir., Mr. Chas. Laurenson, Boise.
IOWA: Des Moines, Oct. 1-3. Sec., Dr. Rodney P. Fagen, Capitol Bldg., Des Moines.
KANSAS: Topeka, Oct. 14. Sec., Dr. Albert S. Ross, Sabetha.
MASSACHUSETTS: Boston, Sept. 9-11. Sec., Dr. Charles E. Prior, 144 State House, Boston.
MICHIGAN: Lansing, Oct. 14-16. Sec., Dr. B. D. Harison, 707-8 Stroh Bldg., Detroit.
MINNESOTA: Minneapolis, Oct. 7-9. Sec., Dr. Thos. McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 7. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Dr. Charles Duncan, Concord.
NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. W. T. Joyner, Roswell.
OKLAHOMA: Oklahoma City, Oct. 7-8. Sec., Dr. J. M. Byrum, Shawnee.
RHODE ISLAND: Providence, Oct. 2-3. Sec., Dr. B. U. Richards, State House, Providence.
UTAH: Salt Lake City, Oct. 7. Sec., Mr. J. T. Hammond, Salt Lake City.
WYOMING: Cheyenne, Oct. 6-8. Sec., Dr. J. D. Shingle, 226 Citizens Bank Bldg., Cheyenne.

Vermont June Examination

Dr. W. Scott Nay, secretary, Vermont Board of Medical Registration, reports the written examination held at Burlington, June 25-27, 1924. The examination covered 12 subjects and included 90 questions. An average of 75 per cent. was required to pass. Thirty candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1923)	81.1, 81.9
University of Vermont	(1924) 80.1, 81.1, 86.1, 86.1, 86.6, 87, 87.1, 87.1, 87.2, 87.6, 87.7, 87.8, 88.1, 88.1, 88.1, 88.3, 88.3, 88.7, 88.9, 88.9, 89.1, 89.1, 89.5, 90.3, 90.8, 92.1, 93.2		
McGill University Faculty of Medicine		(1922)	86.1

Alabama July Examination

Dr. Samuel W. Welch, chairman, Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, July 8, 1924. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Eighteen candidates were examined, all of whom passed. Eight candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University School of Medicine	(1924) 83.8, 85.1, 85.3, 85.3, 85.7, 87.2, 87.9, 88.3, 89.8		
Tulane University		(1923) 85.9, (1924)	89.1
Johns Hopkins University		(1924)	94.8
University of Pennsylvania		(1916)	89.9

University of Tennessee	(1923)	75
Vanderbilt University	(1924)	75.7, 91.1
University of Toronto	(1918)	90.1
National University, Athens, Greece	(1911)*	79.5

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Emory University School of Medicine	(1922)	Georgia
University of Georgia	(1922)	Georgia
Northwestern University	(1923)	Mississippi
Tulane University	(1921)	Mississippi, Georgia,
	(1923)	Tennessee, Mississippi
Vanderbilt University	(1917)	Texas

* Graduation not verified.

Book Notices

ANESTHESIA. By James Tayloe Gwathmey, M.D., Anesthetist to the New York Skin and Cancer, Columbia, and Peoples Hospitals. Second edition. Cloth. Price, $6.50. Pp. 799, with 273 illustrations. New York: The Macmillan Company, 1924.

In his preface to the new edition of this work, Gwathmey calls attention to modern methods associated with anesthesia which have become well established. These include the heating of the ether vapor, oil-ether colonic anesthesia, spinal analgesia, and local and paravertebral anesthesia. The book includes among other things a history of anesthesia, a chapter on physiology, a special chapter on each of the most important anesthetics, and one on each of the important methods of administering anesthetics. Concluding chapters deal with the medicolegal status of the anesthetist, anesthesia during the World War, and painless childbirth and oxygen. Special chapters are included on the use of rebreathing by Willis D. Gatch, on local anesthesia as applied in dentistry by Herrmann Prinz, on intravenous anesthesia by Drs. William F. Honan and J. Wyllis Hassler, and on ethylene anesthesia by Arno B. Luckhardt. Other contributors include Charles A. Elsberg, Walter S. Sutton, James F. Mitchell, William Seaman Bainbridge and John W. Crim, former assistant United States attorney, who is responsible for the section on the medicolegal phases of the anesthetist. The book is one of the most complete and informative that has been prepared on the subject, and is essential to any one giving special attention to anesthetics and their use.

CANCER: HOW IT IS CAUSED; HOW IT CAN BE PREVENTED. By J. Ellis Barker. With an Introduction by Sir W. Arbuthnot Lane, Bart., C.B., M.S., Consulting Surgeon at Guy's Hospital, London. Cloth. Price, $3. Pp. 478. New York: E. P. Dutton & Company, 1924.

Mr. J. Ellis Barker is a journalist who formerly wrote on foreign politics. He appears to have developed a sort of general asthenia due to malnutrition, constipation and lack of exercise. It occurred to him that he was in a state similar to that of a man about to develop cancer. He improved his health by studying food, eliminating constipation and building up good habits. By a strange system of *a priori* reasoning, therefore, he comes to the conclusion that he has prevented the occurrence of cancer in himself, and that his system will be suitable for preventing cancer in others. His thesis is presented in a large book with an introduction by Sir Arbuthnot Lane. This is especially interesting in view of the fact that a large part of the book is given over also to the presentation of the work of Sir Arbuthnot Lane in the diagnosis and treatment of intestinal stasis. Indeed, although the author cites, and has evidently referred to a large amount of the literature of cancer, the outstanding names in his bibliography are those of Sir Arbuthnot Lane and Mr. Frederick L. Hoffman, the statistician. As a result of his considerations, Mr. Barker concludes that cancer may be prevented, if only persons will eat proper foods containing the correct vitamins, avoid constipation and take sufficient exercise. The results of this system of scientific analysis are at times ludicrous, since Mr. Barker is compelled to correlate certain facts in one case to certain conclusions, and the same facts in another case to an opposite conclusion. He neglects entirely in his studies of statistics to take into account the fact that the diagnosis of cancer during the last decade is a scientific matter with almost a perfect percentage of probability, whereas the diagnosis of cancer two generations ago was subject to at least 50 per cent. error. He neglects entirely researches that have been made both in Great Britain and in this country, which show that no vitamin of which we have knowledge at present has any direct influence on the cause of cancer. His analysis of statistics on heredity disregard the definite proofs submitted by such scientific workers as Maude Slye, and pass instead to imaginative reasoning. He accepts a statement made by Sir Arbuthnot Lane that cancer never attacks a healthy organ, disregarding the fact that the cancer itself in the very earliest, perhaps unrecognizable, stage is itself a disease of the organ.

While Mr. Barker's view that cancer may be deterred by rational living is commendable, since rational living may deter any disease, this is in no sense to be recommended as a suitable book for laymen interested in cancer. According to our present knowledge, the proper advice for those interested in cancer is early diagnosis and surgical removal, except in such limited instances as those in which the use of radium or the roentgen ray seems desirable. A book such as this by Mr. Barker will, instead, incline the lay reader to believe that his cancer may be prevented or its growth deterred by eating proper vitamins or practicing good personal hygiene. There is not the slightest scientific evidence to warrant such a belief at the present time; this book can be considered only as a pernicious and harmful piece of literature.

HIGH BLOOD PRESSURE, ITS VARIATIONS AND CONTROL. A Manual for Practitioners. By J. F. Halls Dally, M.A., M.D., B.C.Cantab., Physician to the Mount Vernon Hospital for Tuberculosis and Diseases of the Heart and Lungs. Cloth. Price, $3.25. Pp. 155, with 23 illustrations. New York: William Wood & Co., 1924.

Various methods of estimating the blood pressure are here considered, with the conclusion that the combined auditory-tactile method should be employed as a routine. The author discusses the types of instruments now in use and then passes to the physiologic factors that cause and maintain blood pressure. An elevated diastolic pressure is considered of greater significance than an elevated systolic pressure. High blood pressure is not to be considered as a disease. The forms manifested by an abnormal increase in blood pressure are treated under simple hyperpiesia, the cardiovascular group and the renal group. The closing chapters include: blood pressure in tuberculosis; blood pressure in relation to life insurance, and the history of blood pressure estimation. The author concludes that inaccuracies in technic, and inattention to diastolic and pulse pressures are responsible for failure to appreciate the importance of blood pressure estimations.

A WOMAN'S QUEST. The Life of Marie E. Zakrzewska, M.D. Edited by Agnes C. Vietor, M.D. Cloth. Price, $3. Pp. 514, with 5 illustrations. New York: D. Appleton and Company, 1924.

Dr. Zakrzewska is pictured as a brilliant and energetic pioneer in the struggle to admit women to the study and practice of medicine. The story of her restless and uncompromising ambition, of her failures and successes, of the ungallant reception of women into a profession that was laboriously outgrowing empiricism in its practices, will be read with enthusiasm by the older school of women physicians. The more recent graduates of coeducational medical colleges will probably be unable to appreciate her struggles, and may even prove indifferent.

THE NATURE OF LOVE. By Emmanuel Berl. Authorized translation by Fred Rothwell. Cloth. Price, $2. Pp. 278. New York: The Macmillan Company, 1924.

This volume analyzes a most interesting emotion in an endeavor to answer the question, "Is there any difference between loving and believing that we love?" The author brings to this intricate analysis an immense armamentarium of quotations from philosophers and poets, discarding the biologic explanation. He considers numerous sociological explanations, rejecting also the view that society can arouse this emotion. Finally, he finds it necessary to dispense with all principles of reason, and arrives at the conclusion that love, like thought, comes from God or from nowhere. The ultimate conclusion is that love is essentially an ecstasy similar to the pure religious ecstasy.

Medicolegal

Second Action Not Maintainable Against Physicians

(Knowles v. Dark & Boswell (Ala.), 99 So. R. 312)

The Supreme Court of Alabama says that the plaintiff brought this action against the defendants to recover damages for an alleged breach of an agreement between the parties, entered into, Aug. 9, 1920, under the terms of which the defendants were alleged to have agreed for a consideration to effect a cure of a disease from which the plaintiff was suffering. The defendants interposed a special plea to the effect that the plaintiff had theretofore filed a suit against these defendants, claiming damages for alleged malpractice (and a copy of that complaint disclosed a reference to this contract of employment); that subsequent to the bringing of this suit, namely, Sept. 24, 1921, these defendants paid this plaintiff $2,000 in full settlement and compromise of any and all claims which he had against them or either of them on account of injury alleged by him to have been received during the months of August and September, 1920, by reason of any malpractice on the part of these defendants or either of them. It was then averred that the damages claimed in the present complaint, and for which these defendants paid the plaintiff $2,000, were received under the contract of employment between him and these defendants, entered into, Aug. 9, 1920, for the breach of which this action was brought. To this plea the plaintiff filed a demurrer, which the supreme court holds was properly overruled. The plea disclosed that for the alleged injuries received the plaintiff had a right to proceed against these defendants either in an action in tort or an action ex contractu (arising out of a contract) for the breach of an agreement, and that he elected to proceed in the tort action, and prosecuted it to satisfaction—receiving $2,000, in full payment. It is well established that, when the same act constitutes both a breach of contract and a tort, the injured party may waive the contract and sue in tort, and the same rule applies as to waiver of the tort and a suit on the contract. The damages that the plaintiff received grew out of the contract, for a breach of which the present action was sought to be maintained. The plaintiff elected to pursue his remedy in a tort action, and received his compensation under it. The same act constituted both a breach of the contract and a tort, and it would be manifestly unjust to permit the plaintiff thus to split up his cause of action to recover both in tort and under the contract. Happily, the justice of the case and the law are in accord.

Evidence and Petition in Action Against Surgeon

(Martin v. Greer (Ga.), 121 S. E. R. 688)

The Court of Appeals of Georgia, Division No. 2, in affirming a judgment on demurrer for the defendant, holds, according to a syllabus prepared by it, without any opinion or statement of facts, that a person professing to practice surgery or the administering of medicine for a compensation must bring to the exercise of his profession a reasonable degree of care and skill. In a suit for damages alleged to have been caused by the malpractice of a surgeon, the burden is on the plaintiff to show a want of due care, skill or diligence, and also that the injury resulted from the want of such care, skill or diligence.

While it is true that in determining the question of reasonable care and skill the jury may consider the place of the operation, the circumstances surrounding it, the situation of the defendant with respect to the operation, and all the facts and circumstances which may be shown by the evidence, and which may throw light on the ultimate question, such is not the rule as to pleadings, and it is improper in a petition to set forth evidence instead of directly alleging an issuable fact, or to plead collateral evidential facts which the jury might perhaps believe pointed in the direction of the fact sought to be shown. Likewise, the inclusion in a petition, or attachment thereto as an exhibit, of a roentgen-ray photograph, designed to show the condition of an injured member from the alleged malpractice of a surgeon, is subject to special demurrer. It is also true that allegations in a petition which do not state issuable facts, but state mere conclusions relative to negligence, should be stricken out on timely special demurrer. Under the foregoing rulings, the special demurrers to the plaintiff's petition in this case were properly sustained.

In this case the petition as a whole failed to show any negligent exercise or failure to exercise any professional act or duty owed by the defendant as a surgeon, in sending the plaintiff to the city hospital; or any negligence chargeable to the defendant in the performance there by others of the operation in setting a broken leg; or in any subsequent treatment by the defendant. The allegations consisted largely of evidence, collateral or irrelevant matter, and conclusions of the pleader. The court did not err in sustaining a general demurrer.

Duty to Employee Taken Ill with Food Poisoning

(Long v. Babcock Lumber & Boom Co. (W. Va.), 121 S. E. R. 494)

The Supreme Court of Appeals of West Virginia holds that where an employee of a lumber company while engaged at his work for the company was taken violently ill with food poisoning from the effects of which he died within a short time thereafter, this was not an injury received "in the course of and resulting from his employment," and was therefore not compensable under the workmen's compensation law of that state. The court says that the allegation was that the employee, while actually at work for the defendant, was taken suddenly and violently ill; that the illness was food poisoning. This poisoning was not the result of anything done in connection with, or incident to the performance of, his work. He had evidently eaten something before he went to work which caused his illness.

But where a lumber company withholds from the wages of each of its employees a certain sum per month, in consideration of which it agrees to furnish medical attention and care and hospital service to its employees, this contract implies that in case of one of its employees, from whom it has withheld such sum, is taken violently and helplessly ill with food poisoning while at work in the woods for the company, the company shall procure for him medical aid and care, and convey him to a hospital within a reasonable time from the time the knowledge of such illness is brought home to the company.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Montreal, Canada, Sept. 15-20. Dr. Luther C. Peter, 1529 Spruce Street, Philadelphia, Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Cleveland, Sept. 18-20. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.
American Association of Railway Surgeons, Chicago, Oct. 15-17. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American Child Health Association, Kansas City, Mo., Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.
American College of Surgeons, New York, Oct. 20-24. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Electrotherapeutic Association, New York, Sept. 9-12. Dr. Richard Kovacs, 223 E. 68th Street, New York, Secretary.
American Public Health Association, Detroit, Oct. 20-23. Mr. Homer N. Calver, 320 Seventh Avenue, New York, Secretary.
Central States Pediatric Society, Rochester-Minneapolis, Oct. 30-31. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Colorado State Medical Society, Denver, Oct. 7-9. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.
Delaware State Medical Society, Milford, Oct. 14-15. Dr. W. O. LaMotte, Industrial Trust Building, Wilmington, Secretary.
Indiana State Medical Association, Indianapolis, Sept. 24-26. Dr. Charles N. Combs, 221 South 6th Street, Terre Haute, Secretary.
Kentucky State Medical Association, Louisville, Sept. 23-25. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Medical Association of the Southwest, Kansas City, Mo., Oct. 13-18. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.
Michigan State Medical Society, Mount Clemens, Sept. 9-11. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.
Minnesota State Medical Association, St. Cloud, Oct. 8-10. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.
Missouri Valley, Medical Society of the, Des Moines, Sept. 17-19. Dr. Charles W. Fassett, 115 E. 31st Street, Kansas City, Mo., Secretary.
Nevada State Medical Association, Reno, Sept. 12-14. Dr. Claude E. Piersall, Masonic Temple, Reno, Secretary.
North Dakota State Medical Association, Bismarck, Sept. 10-11. Dr. H. J. Rowe, 5211 Upton Avenue, S., Minneapolis, Minn., Secretary.
Pennsylvania, Medical Society of the State of, Reading, Oct. 6-9. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.
Vermont State Medical Society, Burlington, Oct. 9-10. Dr. W. G. Ricker, St. Johnsbury, Secretary.
Virginia, Medical Society of, Staunton, Oct. 14-17. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

168: 157-312 (Aug.) 1924

*Use of Tryparsamide in Neurosyphilis. W. F. Lorenz, A. S. Loevenhart, T. F. Reitz and C. P. Eck, Madison, Wis.—p. 157.
*Coronary Sclerosis. F. A. Willius and G. E. Brown, Rochester, Minn.—p. 165.
*Coronary Arterial Occlusion: Definite Symptom Complex. H. C. Gordinier, Troy, N. Y.—p. 181.
*Comparative Study in Digifolin Administration. N. E. Clarke, Detroit.—p. 201.
*Effect on Blood of Irradiation; Short Wave Length Roentgen Ray. G. R. Minot and R. G. Spurling, Boston.—p. 215.
*Primary Carcinoma of Liver. B. M. Fried, Boston.—p. 241.
Surgery of Pulmonary Tuberculosis. J. Alexander, Ann Arbor, Mich.—p. 268. To be Cont'd.

Tryparsamide in Neurosyphilis.—Lorenz et al. report their observations with tryparsamide in 185 cases of neurosyphilis. They found that tryparsamide and mercuric salicylate are therapeutically effective in early paresis, meningovascular syphilis, and, to a lesser extent, in taboparesis, tabes and in advanced paresis. The beneficial clinical results generally precede the improvement in the serology. Definite paretic psychoses disappear as the result of treatment. The mental restoration has persisted over a two year period. Visual disturbances occurred in 7 per cent. of the total number of cases treated. In tabes and taboparesis, 23 per cent. of the cases showed visual disturbance. Of thirteen cases showing amblyopia during tryparsamide therapy all but one cleared up after withdrawal of the drug. Twelve of these cases were subsequently treated with tryparsamide without further eye disturbance.

Coronary Sclerosis.—This study was undertaken by Willius and Brown for the purpose of determining the frequency of occult coronary disease, and to obtain data to coordinate clinical and necropsy findings. Eighty-six unselected, consecutive, proved cases of coronary sclerosis were studied. The symptoms were arbitrarily classified as: (1) typical angina pectoris, 21 cases; (2) atypical angina pectoris, 2 cases; (3) the syndrome of progressive myocardial failure unassociated with painful attacks, 22 cases; (4) the syndrome of progressive myocardial failure and typical angina pectoris, 7 cases, and (5) the occult type of coronary sclerosis in which insufficient subjective or objective evidence of cardiac disease existed to permit its clinical identification, 34 cases. The aorta was found diseased in all but 1 case; it was syphilitic in 8 cases. There was aneurysm in 3 cases; in 2 cases involving the thoracic aorta, and in 1 case the abdominal aorta. The heart valves were diseased in 44 cases, and the pulmonary artery in 4 cases. In all cases there were degenerative myocardial changes. Associated disease of the pericardium occurred in 8 cases. Peripheral arteriosclerosis was noted in 60 cases, renal arteriosclerosis in 32 cases and cerebral arteriosclerosis in 13 of the 15 brains examined. Forty-six patients had had varying degrees of nephritis. The gallbladder had been diseased in 22 cases. Twenty-seven patients had had hypertension; 14 had had hypotension. Sudden death occurred in 32 cases, in order of frequency in the clinical groups as follows: typical angina pectoris in 12 cases, occult coronary type in 7 cases, angina pectoris with progressive myocardial failure type in 6 cases, progressive myocardial failure type in 5 cases, and atypical angina pectoris in 2 cases. Gradual cardiac failure occurred in 13 cases. The incidence according to clinical types was: (1) angina pectoris in 5 cases; (2) progressive myocardial failure type in 5 cases; (3) occult coronary disease in 2 cases, and (4) angina pectoris with progressive myocardial failure type in 1 case. Death following surgical operation resulted from various causes in 21 cases, but in only 1 case was it attributable to cardiac disease. Death was due to other causes in 22 cases. Twenty-five patients had had electrocardiographic examination, 17 of whom had revealed significant graphic abnormalities. These findings were: (1) significant T-wave negativity in isolated and combined derivations in 12 cases; (2) auricular fibrillation with significant T-wave negativity in 2 cases; (3) uncomplicated auricular fibrillation in 1 case; (4) auricular flutter in 1 case, and (5) ventricular tachycardia in 1 case.

Symptoms of Coronary Arterial Occlusion.—Thirteen cases have been carefully studied by Gordinier, and each one found to present the subjective symptoms and physical signs considered diagnostic of this clinical entity. Of the five fatal cases but one came to necropsy. This case showed a definite thrombosis of a large descending branch of the left coronary artery with a fresh cardiac infarct. The following is a summary of the salient features of this interesting symptom complex: (1) sudden severe anginoid pain, substernal or upper abdominal; (2) a pinched ashen-gray or very pale facies, often associated with the sensation of impending dissolution; (3) an acute emphysematous distention of the lungs, with dyspnea or extreme orthopnea and moist crackling râles at the bases of the lung, together with the evidences of the acute onset of cardiac decompensation; (4) an easily compressed, rapid, thready pulse, which may present almost any form of arrhythmia; (5) a sudden dropping in the systolic pressure following the severe pain and early myocardial exhaustion; (6) a cardiac impulse, if palpable, that is a diffuse feeble tap, distant heart sounds and often a tic-tac or gallop rhythm; (7) a localized pericardial friction rub, which is evanescent, appearing as early as a few hours or a day or two after the sudden onset of the agonizing pain. It may be missed if the infarct involves the posterior aspect of the heart; (8) a fever of short duration and of a mild type associated with a polymorphonuclear leukocytosis. This does not occur in simple angina pectoris; (9) inversion of iso-electric position of the T-wave, with arborization block; (10) associated with the foregoing symptoms, the presence of a large tender liver, together with the symptoms and physical signs of pulmonary infarction, is suggestive of thrombosis of the right coronary artery or its branches, while the sudden onset of pulmonary edema or recurring attacks, together with the development of sudden arterial plugging of the vessels of the brain, viscera or extremities, with the characteristic electrocardiogram is highly suggestive of a thrombosis of a branch of the left coronary artery.

Comparative Study in Digifolin Administration.—It has been frequently noted that digitalis given intravenously acts more rapidly than when given by mouth. A comparison has been made by Clarke of different preparations given by different methods. In comparing the rapidity of action as measured by the slowing of the heart rate, it was noted that an average slowing of the rate is obtained between three and four hours by intravenous, at about four hours by intramuscular and at six hours by oral administration. The amount of digifolin required to show the earliest and full therapeutic effects is about equal for intravenous and intramuscular injection. By oral administration it required about half again as much of the drug. The average time required for digifolin to show the earliest and maximum effects with the three methods of administration has been obtained. The comparison of these time intervals closely approximates the comparison of the digifolin requirements. The use of digitalis by other than the oral method of administration is not advocated.

Effect of Irradiation on Blood.—A study has been made by Minot and Spurling of the blood of forty-two cases, chiefly of cancer, before and after fifty-six roentgen-ray irradiation treatments. Particular attention was given to the observations on twenty-two of the patients given thirty-six intensive short wave length treatments. The other irradiations were milder. Cases of disease of the hemopoietic tissue are not included. The most important effect of customary therapeutic doses of irradiation on the blood elements is to decrease the number of white cells, especially lymphocytes, so that leukopenia and lymphopenia may occur. When a customary therapeutic dose of short wave length roentgen rays is given, it

causes the white count to reach its lowest point about six days later; at that time leukopenia (a count below 5,000 per cubic centimeter) is more often present than not. A decrease below normal of the absolute numbers of bone-marrow white cells, which is indicative of marrow depression, is not unusual. The new short wave length roentgen-ray therapy, suitably given, produces no changes in the blood that are of a different character from those occurring after milder yet intensive irradiation. However, it does produce more rapid, marked and persistent changes than milder treatment, and if the treatment consists of merely moderate long wave exposures it may not even cause a decrease of white cells. An eosinophilia, often of 7 and as high as 23 per cent., is usual two or three weeks after short wave length irradiation. It appears to develop particularly following repeated exposures. After irradiation the blood contains many degenerated white cells, especially in the first three days. Some increase of immature white cells may be observed, especially at about the time the white count begins to rise, after large doses of irradiation. A slight increase of the platelets soon after irradiation is common. Important changes in the count of the red blood corpuscles and hemoglobin percentage do not occur as a result of mild or intensive therapeutic irradiation. Changes in the numbers of immature cells occur. The clinical condition of the patient will influence the degree and duration of the blood changes after irradiation, but anemia itself does not seem to be of any great importance. Much more important than the condition of the patient in determining the influence of irradiation on the blood is the size, intensity and character of the dose, larger doses producing greater blood changes than smaller ones.

Primary Carcinoma of Liver.—Five cases of primary carcinoma of the liver are reported by Fried. Four cases are classified as cholangiomas, or bile duct carcinoma, and one is classified as hepatoma, or liver cell carcinoma. In all five cases metastases were present in the lungs and in one case also in the kidney. Ascites was present in three cholangiomas and also in the hepatoma. The exact onset of the disease in the cases reported was impossible to determine, but the patient's attention was drawn to this condition two or three months before exitus. In no instance was the diagnosis of this condition made antemortem.

American Journal of Ophthalmology, Chicago

7: 577-668 (Aug.) 1924

Aneurysm of Intracranial Portion of Internal Carotid Artery. D. B. Kirby, New York.—p. 577.
Effect of Pin Hole Disc on Vision. W. M. Bane, Denver.—p. 582.
Use of Radium in Cataract. A. B. McKee and W. F. Swett, San Francisco.—p. 587.
Treatment of Carcinoma of Conjunctiva with Radium. F. M. Johnson, New York.—p. 589.
Projection of Retinal Excitations by Diffuse Light. M. Landolt, Paris, France.—p. 595.
Applications of Fundamental Mathematical Equation to Ocular Refraction and Ophthalmic Lenses. C. Sheard, Rochester, Minn.—p. 597.
Preglaucomatous Eye. H. S. Gradle, Chicago.—p. 603.
Accommodation in Myopia. H. F. Hansell, Philadelphia.—p. 606.
Intracapsular Cataract Extraction; Erisiphake. A. R. Ubaldo and A. S. Fernando, Manila, P. I.—p. 608.
Oculomotor Disturbances. T. Faith, Chicago.—p. 610.
Case of Sarcoma of Eyelids. J. A. Fisher, Asbury Park, N. J.—p. 619.
Embolism of Central Retinal Artery; Paracentesis. B. W. Key, New York.—p. 620.
Type of Iridocyclitis. R. I. Lloyd, Brooklyn.—p. 621.
Cases of Focal Infection. T. H. Odeneal, Beverly, Mass.—p. 622.
Modification of Calkins Muscle Folder for Strabismus. J. W. Calkins, Oakland, Calif.—p. 623.

Annals of Surgery, Philadelphia

80: 161-288 (Aug.) 1924

*Induction of Splanchnic Analgesia. G. Labat, New York.—p. 161.
*Sublingual Fibroma. J. J. Morton, New Haven, Conn.—p. 187.
*Acute Pancreatitis. C. Eggers, New York.—p. 193.
*Postoperative Stricture of Common Bile Duct. E. S. Judd and V. G. Burden, Rochester, Minn.—p. 210.
*Arrested Development of Large Bowel. R. G. LeConte, W. E. Lee and T. McK. Downs, Philadelphia.—p. 217.
*Hemorrhagic Ulcer of Meckel's Diverticulum. R. H. Jackson, Madison, Wis.—p. 222.
*Herniotomy Utilizing Only White Fascia. E. Andrews, Chicago.—p. 225.
*Position After Abdominal Hernia Operation. L. F. Watson, Chicago.—p. 239.
Three Thousand Herniotomies. B. L. Coley, New York.—p. 242.
*Surgical Aspects of Xanthoma Tumors. E. M. Miller, Chicago.—p. 256.
*Effect on Bleeding of Intramuscular Injection of Sodium Citrate. S. G. Higgins and D. Fisher, Milwaukee.—p. 268.
Intracranial Arteriovenous Aneurysm. C. E. Locke, Jr., Cleveland.—p. 272.

Splanchnic Analgesia.—The anesthesia problem is stated by Labat as follows: It cannot be proven by statistics that major abdominal operations performed under general narcosis are associated with greater dangers than when regional anesthesia is utilized; nor can it be statistically determined whether or not the induction of regional anesthesia involves greater risks than the administration of ether narcosis. It is a matter of opinion based on more or less justifiable attitudes and the personal equation of the operator plays a very important part in the achievement of the end-results. But it is well established that local anesthetics, when used judiciously, limit their field of action to the anesthetized area and leave practically undisturbed the functional activities of the organs on which life chiefly depends. That postoperative disturbances, which are mostly postanesthetic, are considerably minimized, morbidity and mortality greatly reduced when regional anesthesia is the method employed, cannot be honestly denied. That there are cases in which general narcosis should absolutely be avoided is most certain, whatever be the attitude of the profession to the question of regional anesthesia or general narcosis in abdominal surgery. It is chiefly on behalf of the bad risk patients that splanchnic analgesia has been devised. Of the three original methods Wendling's is not recommended by Labat. Braun's method has a few partisans. Kappis' method enjoys the favor of the majority of writers and certainly has the greatest practical value. Best results are obtained when the solution is deposited between the semilunar ganglia and the renal pedicles. Variations exist in the inclination of the twelfth rib on the vertical column which are responsible for a certain number of failures. These failures can be reduced to a minimum by applying the coefficient of correction of the costovertebral angle, that is puncturing on the lower border of the twelfth rib opposite the upper extremity of the first lumbar spinous process. It is perfectly safe to approach the splanchnic area from the back. By keeping close contact with the vertebral column and following the technic described for that route it is impossible to make an intraspinal or an intravenous injection. Splanchnic analgesia has a very great field. There seems to be no contraindication to its use. It need only be applied judiciously by those already familiar with the regional method.

Sublingual Fibroma.—A chronic swelling involving the posterior sublingual region in a middle aged man was treated by Morton for about one year by radiotherapy without apparent effect. The growth was then removed through a submental incision and microscopic examination showed it to be a fibroma. The growth measured 7.5 by 7 by 5 cm. and weighed 170 gm. No similar case has been found in the literature.

Acute Pancreatitis.—Eggers reports six cases of acute pancreatitis which seem to support the theory that infection as such has nothing or little to do with the condition, but that it is due to the action of liberated pancreatic ferments on the surrounding tissue.

Postoperative Stricture of Common Bile Duct.—Judd and Burden report ten cases. Postoperative stricture of the common duct is usually the result of operative trauma. It may also follow localized infection or necrosis of the wall of the duct. The symptoms may be those of permanent or intermittent biliary obstruction, and often suggest stone in the common duct. The patients are very ill and are grave surgical risks because of jaundice, cholangeitis and impaired liver function. The site of the stricture is usually at the juncture of the cystic and common ducts. Operation should provide biliary drainage and restoration of the normal course of the bile. Results of operation are fairly satisfactory, considering the hazard and technical difficulty, and the otherwise almost hopeless nature of the condition.

Arrested Development of Large Bowel.—LeConte, Lee and Downs report a case of early arrest of development of the colon. Superimposed on a simple malformation were the

sequelae of a former peritonitis, which kinked and bound the colon together in such a way as to result in chronic obstruction of mild degree. Associated, whether coincidentally or etiologically could not be determined, was a condition of exophthalmic goiter and of manic depressive psychosis. The embryology of the alimentary canal is discussed in explanation of the condition found.

Hemorrhagic Ulcer of Diverticulum.—Jackson cites a case in which there were repeated attacks of severe intestinal hemorrhage due to an ulcer of Meckel's diverticulum. No other case is said to be on record.

Herniotomy.—The importance of the endo-abdominal fascia is emphasized by Andrews. Considerable evidence is presented that the use of the internal oblique is not only futile, but also probably actually harmful. An operation is described in which the restoration of the canal is made using only white fascia. The floor consists of the endo-abdominal fascia plus the external oblique. The roof of the left-over lower fragment of the external oblique aponeurosis is overlapped or imbricated in front of the cord.

Jack-Knife Position After Herniotomy.—Watson recommends that the jack-knife position—elevation of the shoulders and knees—be maintained for from five to ten days after operation and is usually to be advised for all patients following operation for inguinal, femoral, umbilical and ventral hernia.

Xanthoma.—Three cases are reported by Miller. In one case the tumor was situated on the dorsum of the foot; in the second case the right breast was the seat of the tumor, and in the third case there were multiple myelomas involving the bones of the cranium, vertebrae and extremities. For the purpose of microscopic study a piece of tissue was removed from a lesion in the shaft of the humerus. The predominating types of cells were the plasma cells and myelocytes, but in addition there were areas near the cortical bone in which large multinuclear foreign body giant cells were seen and in a few places the typical foam cells characteristic of xanthoma tissue were present.

Intramuscular Injection of Sodium Citrate Hastens Blood Coagulation.—Higgins and Fisher inject 15 c.c. of a 30 per cent. chemically pure sodium citrate solution into each buttock, preceded by the injection of procain. This method is apparently free from danger, no untoward results having been noted in over fifty cases. It causes a prompt reduction of the coagulation time of a duration of one to three hours with a gradual return to normal within twenty-four to forty-eight hours.

Archives of Dermatology and Syphilology, Chicago

10: 139-274 (Aug.) 1924

*Pigmentation of Skin Associated with Lymphosarcoma. A. S. Warthin, Ann Arbor, Mich., A. W. Crane and J. B. Jackson, Kalamazoo, Mich. —p. 139.
*Osteosis Cutis. S. W. Becker, Rochester, Minn.—p. 163.
Multiple Cutaneous Leiomyomas of Skin. M. Scholtz, Los Angeles.—p. 173.
*Onychauxis in a Eunuchoid. H. Lisser, San Francisco.—p. 180.
*Mycosis Fungoides: Three Cases of Tumor D'Emblée Type. E. A. Oliver, Chicago.—p. 183.
Antigen for Precipitation Test with Syphilitic Serums. O. Ishii, New York.—p. 203.
Asymptomatic Neurosyphilis Developing During Systematic Treatment. L. W. Shaffer, Rochester, Minn.—p. 209.

Pigmentation of Skin with Lymphosarcoma.—The case studied by Warthin et al. was one of Addison's disease, due to pressure atrophy of the chromaffinic tissues of the abdominal sympathetic and suprarenals produced by a generalized aleukemic lymphoblastoma primary in the retroperitoneal nodes.

Osteitis Cutis.—A case is reported by Becker of a hard, resilient plaque, containing osseous tissue, in the scalp of a woman, aged 32. The duration of the lesion was fourteen years, during which time mechanical irritation had caused repeated ulceration and crusting, and bodies "like bone" had been removed. There was no history of previous trauma. The overlying skin was cicatricial with follicular atrophy, there being about half the normal amount of hair on the area. Microscopic study revealed islands of true bone, having lamellar configuration, a periosteum or pseudoperiosteum, marrow cavities with endosteum, and lacunae and canaliculae. No other calcified tissue and no cartilage were seen. The occurrence of concomitant hypertrichosis, a keratotic nevus of the sole and a nevus pigmentosus of the finger, suggests that the osteosis may have been a nevus formation, due to fetal inclusion or a phylogenetic atavism.

Onychauxis in Eunuchoid.—The case reported by Lisser concerns a young man who suffered unmistakably from eunuchoidism, due to trauma and subsequent sloughing and atrophy of the testicles. He presented obvious onychauxis of finger and toe nails. The condition disappeared by supplementing the gonad deficiency with subcutaneous implantations into the abdominal wall of fresh unextracted, untreated ram's testicular substance.

Mycosis Fungoides.—Three cases of mycosis fungoides showing atypical features are reported by Oliver. All three cases showed a limitation of the disease to the legs. In none of them were there any signs of a premycotic stage. The pathologic findings in all of them agree with the pathologic findings previously reported as pathognomonic for the disease. All three patients died.

Atlantic Medical Journal, Harrisburg, Pa.

27: 691-778 (Aug.) 1924

Surgical Treatment of Complete Uterine Prolapse. B. C. Hirst, Philadelphia.—p. 691.
Relative Values of Irradiation and Radical Hysterectomy for Cancer of Cervix. J. G. Clark and F. B. Block, Philadelphia.—p. 696.
Focal Infection as Danger to Pregnant Woman. J. L. Gilmore, Pittsburgh.—p. 699.
Pediatrist and Congenital Syphilis. R. S. Haynes, New York.—p. 702.
Mechanism of Infection and Immunity in Congenital Syphilis. J. A. Kolmer, Philadelphia.—p. 707.
Intradermal Vaccination. D. E. Berney, Scranton, Pa.—p. 713.
Insulin and Diet in Diabetes. O. H. Petty, Philadelphia.—p. 717.
Surgery Under Pennsylvania Compensation Law. L. F. Stewart, Clearfield, Pa.—p. 722.
Importance of Foci of Infection in Mouth from Dentist's Viewpoint. L. W. Ohl, Pittsburgh.—p. 726.
*Nervous Indigestion. J. Q. Thomas, Norristown, Pa.—p. 728.
*Migraine: Paralytic Manifestations. G. J. Wright, Pittsburgh.—p. 737.

Nervous Indigestion.—Thomas cites a considerable number of cases in which chronic indigestion of varying degree was the chief symptom of a condition that later became exceedingly serious as gastric and duodenal ulcer, splanchnoptosis, cancer of the stomach and of the esophagus, gastric achylia, gallbladder disease, incipient tuberculosis, tabes, heart disease or myocardial insufficiency, angina pectoris, Addison's disease and chronic appendicitis.

Paralytic Manifestations of Migraine.—Wright says that whatever may be the first cause of migraine, the chief effects are experienced by the sympathetics and the vascular system, as a result of which more or less localized cerebral vasomotor spasms occur. Such a view will allow one to interpret the unusual and atypical cases, particularly the paralytic, aphasic and hemianopic phenomena. Fortunately migraine is in the vast majority of instances a benign affection, and yet the literature furnishes many examples of permanent sequelae, both motor and sensory. Migraine practically always disappears after 50, but in cases in which it continues into the degenerative period of life, and in any case at any age in which there is vascular disease, attacks of migraine are not free from danger.

Boston Medical and Surgical Journal

191: 239-282 (Aug.) 1924

Surgical Treatment of Chronic Ulcer of Stomach and Duodenum. F. B. Lund, Boston.—p. 239.
Heliotherapy. R. P. Schwartz, Perrysburg, N. Y.—p. 243.
*Prevention of Tuberculosis. W. P. Buffum, Jr., Providence, R. I.—p. 249.
Evolution of Juvenile Tuberculosis. H. D. Chadwick, Westfield, Mass. —p. 252.
Ocular Facts for General Practitioner. H. Lowell.—p. 254.

Tuberculosis Preventorium.—The preventorium idea is based on the assumption that a considerable percentage of the cases of adult tuberculosis is due to the juvenile type of infection, which has been latent in childhood, and later, in the adult, spread and caused the pulmonary type of the disease.

It is the opinion of the majority of tuberculosis experts that this extension is the cause of the greater part of adult tuberculosis, and that fresh infection occurring during adult life is a less common occurrence. The preventorium is planned to take children who are supposedly infected with tuberculosis, and whose general physical condition and nutrition cannot be kept in a satisfactory state at home. By improving their physical condition it is hoped to lessen their liability to adult tuberculosis. Buffum describes briefly the Lakeside Preventorium at Hoxie, which is financed and managed by the Providence Tuberculosis League, founded in 1912.

California and Western Medicine, San Francisco

22: 365-422 (Aug.) 1924

Preliminary Thyroid Operations. H. K. Bonn, Los Angeles.—p. 365.
Health Conditions in Nevada. C. P. Knight.—p. 368.
*Undescended Testicle Complicating Acute Appendicitis. M. L. Herzig, Seattle.—p. 371.
Chronic Ethmoidal Conditions. H. McNaught, San Francisco.—p. 373.
Industrial Surgery as Specialty. A. W. Moore, Los Angeles.—p. 375.
Artificial Pneumothorax vs. Rest in Pulmonary Tuberculosis. P. K. Brown, San Francisco.—p. 380.
*Three Hundred Cases of Pulmonary Tuberculosis Treated with Partial Antigens. M. Rothschild and H. Warren, Belmont, Calif.—p. 381.
Bad Risk and Surgeon. R. Smith, Los Angeles.—p. 382.

Cryptorchidism Complicates Appendicitis.—Herzig cites a case of bilateral cryptorchidism with retention of the right testis in the inguinal canal, in which there was also present an acute appendicitis. The symptoms were not typical of appendicitis, and attention was focused on the testicular condition. Operation disclosed a ruptured gangrenous appendix, surrounded by a well organized network of adhesions, with a small quantity of pus present on opening the abdomen. Removal of appendix and drainage was followed by prompt recovery.

Partial Antigens in Treatment of Tuberculosis.—The partial antigens have given Rothschild and Warren better results than any other toxin free tuberculins. They have used them for three years, and with each year their results have become better, a fact said to be due to a modification in treatment. They have not strictly followed the directions of Much and Deycke, but have used the partial antigens strictly intracutaneously as Sahli, in Switzerland, has recommended for the Beraneck serum. Also they have, especially in the more advanced cases, confined themselves to extremely small dosages, in longer intervals, increasing the doses only when considered justifiable.

Canadian Medical Association Journal, Toronto

14: 671-778 (Aug.) 1924

*Clinical and Laboratory Methods of Diagnosis. J. Halpenny.—p. 671.
Tuberculosis of Larynx. R. S. Pentecost.—p. 674.
Roentgen-Ray Sickness and Chlorid Retention. A. T. Cameron and J. C. McMillan.—p. 679.
Anatomic Points Relative to Infections of Hand. I. M. Thompson.—p. 683.
Conservation in Treatment of Hand Injuries. T. G. Hamilton.—p. 686.
*Epidemic of Virulent Smallpox in Windsor. F. Adams.—p. 692.
Prophylaxis in Obstetrics. L. Arthur.—p. 697.
Treatment of Abortion. H. C. Burgess.—701.
Anesthesia in Obstetrics. W. Bourne.—p. 702.
*Conclusions After Symposium on Obstetrics. W. W. Chipman.—p. 704.
Intracardiac Adrenalin in Asphyxia Neonatorum. W. F. Abbott.—p. 706.
Modern Tendencies in Infant Feeding. A. Goldbloom.—p. 709.
Acid Milk Mixtures in Infant Feeding. R. R. Struthers.—p. 713.
Factors in Diagnosis of Syphilis. J. H. Stokes and H. A. Des Brisay.—p. 715.
Tryparsamide in Neurosyphilis. N. Viner.—p. 719.
Management of Neurosyphilitic. G. O. Scott and G. H. J. Pearson.—p. 724.
Silhouette Radiograph in Clinical Diagnosis. A. P. Bertwistle.—p. 731.
Fatal Case of Diabetes Mellitus Complicated by Infection. E. S. Mills.—p. 732.
Case of Cerebral Tumor. C. K. P. Henry and L. J. Rhea.—p. 734.
*Rupture of Right Rectus Simulating Appendicitis. R. I. Harris.—p. 739.
Rat Bite Fever. H. L. Reddy.—p. 741.

Methods of Diagnosis.—Halpenny says: The laboratory is of inestimable assistance in making a diagnosis in some cases. He would be a rash clinician who would, in this day of enlightenment, refuse to avail himself of the assistance of the laboratory. But many cases can be determined quite without this aid. The great danger is that the rising generation of physicians will cease to try to acquire the full development possible for all the human senses. The laboratory must forever remain an assistant to the clinician, not the clinician an assistant to the laboratory.

Vaccination Protects Against Smallpox.—In this epidemic no one vaccinated successfully within twelve years contracted smallpox. No one vaccinated successfully, no matter how long before, died of the disease. Of the cases in persons who had never been successfully vaccinated, 71 per cent. died. Vaccination of almost the whole population stopped the epidemic abruptly and completely.

Discussion on Labor.—A review of 1,733 cases of labor by Chipman leads him to conclude that labor is a physiologic process, if the woman is but let alone. The ideal labor, the one safest for the mother and child, remains still the labor that is spontaneous. Hence, the routine abrogation of the second stage by version and extraction; or by the use of so-called "prophylactic forceps"; the "vicarious labor" of the obstetrician is a practice unsafe and to be condemned. In the 1,733 cases, only seven mothers died, a mortality rate of 0.4 per cent. Two died from sepsis, three from toxemia (the eclamptic type) and one from hemorrhage in a placenta praevia. One woman succumbed to pernicious vomiting when she was four and one-half months pregnant. Chipman says that a woman who has suffered in one pregnancy from an eclampsia, should, in any subsequent pregnancy spend the last trimester largely in bed; and this irrespective of all chemical findings, or nonfindings, in the urine or blood. There were seventeen cases of placenta praevia, and three of these were central. One mother and four of the children succumbed. These cases were characterized by the onset of painless uterine hemorrhage during the last trimester; hence Chipman says: Given such a uterine hemorrhage, and the diagnosis of placenta praevia made, either central or marginal, the sooner delivery is effected the better. In the treatment of toxic cases, 200 c.c. of a 20 per cent. glucose solution may be given intravenously, two or even three times in the twenty-four hours, often with marked benefit.

Rupture of Rectus Abdominis.—In Harris' case there was a rupture of the right rectus in its lower third, which occurred during an attack of influenza in which coughing was the principal symptom.

Colorado Medicine, Denver

21: 219-248 (Aug.) 1924

What Practitioner Should Expect in Roentgen-Ray Diagnosis. F. B. Stephenson, Denver.—p. 222.
*Fluoroscope in Examination of Heart: Original Orthodiascope. C. T. Burnett, Denver.—p. 228.
Psychic Factor in Health and Disease. A. C. McClanahan, Delta.—p. 232.
Bacterial Nature of Mitochondria. I. E. Wallin, Boulder.—p. 236.
Hawaiian Islands. H. G. Wetherill, Denver.—p. 241.

Fluoroscopic Examination of Heart.—Burnett asserts that physical methods of examination in the demonstration of aortitis, dilatation and aneurysm of the aorta have all proven undependable, while aortic thickening (increased density) and the pulsations of dilatation and aneurysm are demonstrated fluoroscopically with the greatest of ease. All factors influenced by motion as presented in all the various positions of the heart or of any of its chambers or appendages are exhibited in a manner which furnishes a mental picture far more valuable than an instantaneous record of one fraction of the cycle. Sometimes an anteroposterior exposure shows a very slight or no deviation from the normal but an oblique view discloses an increased density, enlargement or pulsation not previously noted. A point not to be overlooked is that this procedure permits the internist to perform this part of the examination along with the routine examination, thus insuring a correlation of the various findings.

Journal of Experimental Medicine, Baltimore

40: 151-279 (Aug.) 1924

Lead Studies. J. C. Aub, P. Reznikoff and D. E. Smith, Boston.
III. Effects of Lead on Red Blood Cells. 1. Changes in Hemolysis.—p. 151.
*III. 2. Surface Phenomena and Their Physiologic Explanation.—p. 173.
*Id. III. 3. Chemical Explanation. J. C. Aub and P. Reznikoff, Boston.—p. 189.

*Diet and Tissue Growth. II. Regeneration of Liver Tissue During Nutrition on Inadequate Diets and Fasting. A. H. Smith and T. S. Moise, New Haven, Conn.—p. 209.
Cultural Characters of Bacillus Abortus. T. Smith, Princeton, N. J.—p. 219.
Testing Enzymes of Living Hemolytic Streptococci. I. Lipase. W. P. Thompson and F. L. Meleney, Peking, China.—p. 233.
Biology of Streptococcus. III. Agglutination and Absorption of Agglutinin with Streptococcus Scarlatinae. F. A. Stevens and A. R. Dochez, New York.—p. 253.
Inhibitory Effect of Acridin on Sporogony of Coccidium. P. A. Lewis, Princeton, N. J.—p. 263.
Methemoglobin Formation by Sterile Culture Filtrates of Pneumococcus. H. J. Morgan and J. M. Neill, New York.—p. 269.

Effect of Lead on Erythrocytes.—According to Aub et al. the effects of lead on red blood cells are manifested by shrinkage, inability to expand, increased brittleness and loss of the normal consistency which makes their surface sticky. After exposure to lead, red blood corpuscles are more like hard, inelastic, brittle rubber balls than like the soft, elastic, resilient cells characteristic of normal blood.

Cause of "Leaded" Erythrocyte.—Aub and Reznikoff assert that the chemical reaction which causes the physical changes in the red blood cell in cases of lead poisoning is a precipitation of insoluble lead phosphate and a formation of acid. This causes the "leaded" red blood cell to change from an elastic distensible sac, to one which is contracted, relatively inelastic and brittle. In such condition the cell can poorly withstand the trauma involved in circulation of the blood, and this lack of resistance probably explains the marked destruction of peripheral blood in lead poisoning.

Diet and Tissue Growth.—The results of the experiments made by Smith and Moise indicate that the requirement for the essential amino acids for growth of individual organs of the body is less than that for correlated growth of the whole body.

Journal of Industrial Hygiene, Boston

6: 125-168 (Aug.) 1924

Lead Studies. V. A. S. Minot, Boston.
*A. Distribution of Lead in Organism After Absorption by Gastro-Intestinal Tract.—p. 125.
B. Distribution of Lead in Organism After Absorption by Lungs and Subcutaneous Tissue.—p. 137.
*Distribution of Lead in Human Organism. A. S. Minot and J. C. Aub, Boston.—p. 149.
Lead Studies. X. Deposition of Lead Salts, Solubilities of Di-Lead Phosphate in Water and of Di-Lead and Tri-Lead Phosphates in Lactic Acid. L. T. Fairhall and C. P. Shaw, Boston.—p. 159.

Distribution of Absorbed Lead in Organism.—Minot asserts that lead, even in solution, when administered by mouth, is absorbed into the general circulation only in small amounts. The liver serves as an effective protector for the rest of the organism by removing from the portal circulation and excreting in the bile much of the lead absorbed from the gastro-intestinal tract. A small amount of lead reaches the general circulation and is distributed to the various tissues of the body. The bones show especial affinity for the lead in the blood stream and retain it. The concentration of lead in the other tissues does not increase as absorption continues. These two facts cause the relative as well as the absolute amount of lead in the skeleton to increase. If absorption ceases and the subject returns to normal conditions, practically all the lead in the body becomes localized in the skeleton, where it is held as a temporarily harmless deposit. The harm done by lead apparently occurs during the process of transportation rather than during storage in the body.

Id.—In actual cases of chronic plumbism in man, events have been seen to run the same course as in experimental animals. While symptoms of plumbism are present, as a result either of absorption of lead from external sources or a mobilization of a skeletal store, lead is distributed generally throughout the organism. After exposure has ceased and lead is no longer entering the circulation there is almost complete selective localization of lead in a temporarily harmless skeletal deposit. The medicolegal importance of these data is discussed.

Journal of Infectious Diseases, Chicago

35: 105-212 (Aug.) 1924

Hydrogen Ion Concentrations for Bacillus Botulinus and Quantitative Estimation of Growth. XVI. C. C. Dozier, San Francisco.—p. 105.
*Influence of Sugars and Salt on Bacillus Botulinus. XVII. C. C. Dozier, San Francisco.—p. 134.
*Resistance of Spores of Bacillus Botulinus to Disinfectants. XVIII. C. C. Dozier, San Francisco.—p. 156.
*Bacteriologic Study of Middle Ear Infections. E. Valentine, San Francisco.—p. 177.
*Occurrence of Bacillus Botulinus in Human and Animal Excreta. XXI. E. J. Easton and K. F. Meyer, San Francisco.—p. 207.

Botulinus Toxin Produced by Enzyme.—The evidence presented by Dozier seems to suggest that toxin production by *Bacillus botulinus* is a function of enzyme action, and the bacterial cell is probably the matrix of the poison.

Resistance of Botulinus Spores to Disinfectants.—Dozier asserts that 10 per cent. hydrochloric acid at room temperature may be depended on to destroy all *Bacillus botulinus* spores within an hour. If a longer time can be allowed for sterilization, liquor formaldehydi diluted once with warm water acting over a period of at least twenty-four hours is recommended. It is quite probable that such a solution held at from 60 to 70 C. for a shorter time would be as efficient.

Bacteriology of Middle Ear Infections.—Valentine found that the beta hemolytic streptococcus is probably the most important etiologic organism in the majority of acute middle ear infections in San Francisco. In a small percentage of cases, staphylococci, pneumococci, green (alpha) streptococci and diphtheroid bacilli predominate. The organisms obtained from twelve chronic cases, in pure or mixed culture, included diphtheroid bacilli, staphylococci, *Bacillus pyocyaneus, B. proteus* and *B. coli.* A study of the throat flora in relation to the bacteria found in the ear discharges of acute middle ear infections revealed that in cases in which the beta hemolytic streptococcus, pneumococcus or green (alpha) streptococcus are the apparent exciting factors in the ear discharge, the same bacterial species are found in the throat. In nineteen out of twenty-two cases of bilateral otitis media involved at approximately the same time, the same bacterial species was obtained in the primary culture from both ears in each individual. The strains of beta hemolytic streptococcus from 53 primary ear discharges fall into the following fermentative groups: pyogenes, 45, or 85 per cent.; infrequens, 5, or 9.4 per cent.; equi, 3, or 5.6 per cent. In the cases studied over a considerable period of time, diphtheroid bacilli and staphylococci have been found to be the most frequent secondary invaders in the ear discharge after the acute stage of the infection. There is some indication that in certain cases these bacterial varieties may be factors responsible for the chronicity of the inflammatory process.

Excreta Do Not Contain Bacillus Botulinus.—Easton and Meyer failed to find *Bacillus botulinus* in the stools of eighty-eight healthy persons, although it was known that the spores were being ingested on raw fruits and vegetables which served as food. Three hogs and two cattle specimens, or five out of fifty samples of animal excreta collected in widely separated areas of California from hogs, cattle, horses, sheep and chickens, contained *B. botulinus,* Type A. The evidence secured from an examination of ninety-five manure specimens strongly indicates that animal excreta contributes relatively little to the pollution of the soil with *B. botulinus.*

Nebraska State Medical Journal, Norfolk

9: 289-332 (Aug.) 1924

Hemorrhages of Pregnant Uterus. P. Findley, Omaha.—p. 289.
Blood Chemistry as Aid to General Practitioner. R. W. Webster, Chicago.—p. 295.
Biologic Action of Roentgen Ray. E. W. Rowe, Lincoln.—p. 303.
*Esophageal Diverticula. W. J. Arrasmith, Grand Island.—p. 307.
Anorectal Complaint. L. E. Moon, Omaha.—p. 311.
Gonorrhea. P. H. Bartholomew, Lincoln.—p. 315.
The Ulcer Problem. F. Conlin, Omaha.—p. 318.
Adolescence Glaucoma. D. D. Sanderson, Lincoln.—p. 322.
Multiple Pregnancy: Sixteen Cases. A. A. Bald, Platte Center.—p. 324.

Esophageal Diverticulum.—Arrasmith's case was one of diverticulum at the esophagopharyngeal junction in a man, aged 66. For ten years the chief complaint was that he "spit back" food and liquids. Finally the condition became so bad that he could not satisfy his appetite and as a consequence there was a gradual loss in weight. The diverticulum was cut off in a two stage operation. The man is now entirely well.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 41-88 (July 12) 1924

*Cocain, Butyn, Tutocain and Other Local Anesthetics. A. J. Copeland.—p. 41.
*Cesarean Section. E. F. Murray.—p. 44.
*Bacteriophage in Treatment of Typhoid. J. Smith.—p. 47.
*Precipitation of Crisis in Treatment of Pneumonia. F. M. Gardner-Medwin.—p. 49.
*Blood Infection of Submaxillary Gland. W. Mercer.—p. 51.
Amidopyrin in Treatment of Measles. M. Loewenthal.—p. 51.
Return of Pulsation in Thrombo-Agiitis Obliterans. F. P. Weber.—p. 52.
Case of Onychogryphosis. W. G. Nash.—p. 52.
Strangulated Hernia in Infant. F. A. H. Simmonds.—p. 52.

Local Anesthetics.—Copeland's experiments show that the best of the local anesthetics for the eye are cocain and butyn. Tutocain may also have a use. Tropacocain, novocain and eucain are less valuable for deep anesthesia. For the nose, cocain and tutocain are alone useful. For subcutaneous injection novocain is much the best. Besides cocain, it is believed that the properties of butyn and tutocain may render them addiction drugs.

Cesarean Section.—Murray records an experience of 116 sections, the majority of which were performed to anticipate or relieve obstructed labor due to pelvic contraction, and others for less common indications. Forty-three women operated on by Murray early in labor with unruptured or recently ruptured membranes all lived as did also their babies. Of the 116 cases with the exception of two deaths under anesthesia the women who died were all very exhausted and definitely infected. Ten mothers and fourteen infants died. The mothers of eight of these babies lived.

Bacteriophage for Typhoid.—The bacteriophage employed by Smith in the treatment of seven cases of typhoid was isolated from the feces of a normal person who never had an intestinal infection. It was obtained by the technic devised by d'Herelle. In five cases there occurred an immediate lysis after the administration of bacteriophage. In the two remaining cases, in which the blood culture showed the presence of *Bacillus typhosus*, the bacteriophage had apparently no effect in modifying the course of the disease. The strains of *B. typhosus* obtained from the blood, from the urine, and from the feces of the various patients were equally susceptible to the bacteriophage in vitro.

Precipitating Crisis in Pneumonia.—Gardner-Medwin formulates the following conclusion: Pneumonia is the result of lowered resistance. Lowered resistance is coincident with, if not caused by, leukopenia. Leukopenia is the result of a toxin which temporarily paralyzes the power of the system to respond to the chemotactic call of bacterial invasion. Sodium nucleinate, injected intramuscularly, has the power to overcome this disability and to call out the reserves of leukocytes stored in the marrow, converting the leukopenia into a leukocytosis, thereby precipitating the devolution of the disease. The effect of sodium nucleinate is independent of the duration of the illness, provided the patient is not in a dying condition before it is administered. The action of this remedy is greatly facilitated by intensive alkalinization of the system by the administration of large doses of sodium bicarbonate. Lobar pneumonia reacts more typically and satisfactorily than does bronchopneumonia.

Blood-Borne Infection of Submaxillary.—Mercer reports a case of blood-borne infection of the salivary glands supervening on a duct obstruction inflammation. An elbow wound was the source of the infection. On sectioning the gland a small calculus, about the size of a pea, was found embedded in a part of the gland which had become much fibrosed.

2: 89-136 (July 19) 1924

Influence of Radiology on Conceptions of Disease. T. Horder.—p. 89.
*Cancer of Cervix. S. Forsdike.—p. 94.
*Hernia into Inferior Duodenal Fossa. J. J. Levin.—p. 98.
Treatment of Hemorrhoids by Submucous Injections of Chemicals. H. G. Anderson.—p. 100.
*Attempt to Vaccinate Children Against Tuberculosis. N. Raw.—p. 102.
Partial Heart Block Complicating Aortic Incompetence. H. C. Nixon.—p. 103.
Knock Knee and Scoliosis. A. H. Shennan.—p. 103.
Ascaris Lumbricoides from Herniotomy Wound. Q. Stewart.—p. 103.
Surgical Emphysema Due to Parturition. A. W. Hansell.—p. 104.
Edema of Larynx from Potassium Iodid. G. A. G. Simpson.—p. 104.
Rupture of Aortic Aneurysm in Young Woman. R. Mackinnon.—p. 104.
Uncommon Form of Dislocation of Patella. E. G. Kennedy.—p. 104.

Treatment of Cancer of Cervix.—In Forsdike's opinion, for cases of carcinoma clinically limited to the cervix the only treatment is operation. For cases which have clinically invaded the pericervical tissues the treatment is by radium to the cervix and roentgen rays to the pelvic tissues. Salts of copper play an important though subsidiary part in treatment by radium. Preoperative and postoperative irradiation is of considerable value.

Hernia into Inferior Duodenal Fossa.—Levin submits a case which he believes is further proof that this type of hernia is congenital in origin.

Vaccination Against Tuberculosis.—Raw's experiments tend to show that it is possible to immunize animals against tuberculosis by means of a protective vaccine prepared from attenuated bacilli. The duration of the immunity is not yet known. It seems to be probable to Raw that children may be protected against infection in the household. All children over the age of 1 year who are living in the same house with a tuberculous member of the family ought to be protected against infection, and it is in the early years of life that such infection usually occurs. Raw has treated 412 children, varying in age from 1½ to 14 years, one of whose parents was suffering from pulmonary tuberculosis, with two prophylactic doses of a vaccine prepared from dead cultures of attenuated bovine bacilli. The injections were given at an interval of two weeks. No reactions were observed, and in no case has there been any untoward symptom. All the children were treated at the request of a parent. Up to the present no child has developed tuberculosis.

Lancet, London

2: 101-150 (July 19) 1924

Chronic Diarrhea. J. A. Ryle.—p. 101.
*Venous Pressure in Normal Persons. D. E. Bedford and S. Wright.—p. 106.
*Inoculation of Heterologous Antigens. A. B. Rosher.—p. 110.
*Glandular Activity in Human Fetus. M. F. L. Keene and E. E. Hewer.—p. 111.
*Congenital Occlusion of Common Hepatic Duct. W. M. Feldman.—p. 113.
Case of Actinomycosis. A. I. G. McLaughlin and D. S. Page.—p. 114.
Pancreas of Teleostean Fishes as Source of Insulin. S. Vincent, E. C. Dodds and F. Dickens.—p. 115.
Incidence of Heart Lesions (40 Per Cent.) in Infective Arthritis. T. W. Froggatt.—p. 116.
Torsion of Omentum Simulating Appendix Abscess. M. W. Bulman.—p. 116.

Venous Pressure in Normal Persons.—The pressure in the arm veins in normal persons has been investigated by Bedford and Wright by Claud's manometer according to the technic of Villaret, St. Girons and Grellety-Bosviel. With the subject recumbent and the arm horizontal, the readings obtained were between 5 and 15 cm. water in 90 per cent. of cases. Less constant results were obtained than those recorded by other workers with this method. This method involves errors which probably render the lower readings unreliable, but should prove sufficiently accurate for detecting pathologic increases in venous pressure. No reading under 15 cm. water obtained by this method should be regarded as pathologic. More accurate determination of low venous pressure is possible if the author's modification is employed. The factors responsible for the normal peripheral venous pressure are discussed.

Inoculation of Heterologous Antigens.—Various nonspecific antigens were used by Rosher in an attempt to influence a steady agglutination titer in rabbits. The only instance in which the titer was appreciably affected was when the nonspecific antigen bore close serologic relationship to the specific one. Steady agglutination titer remained unaffected by severe constitutional disturbances occurring as the result of infections artificially produced. These results are evidence in support of the reliability of the repeated agglutination method as a means of diagnosis of enteric fever in the inoculated subject.

Glandular Activity in Human Fetus.—According to Keene and Hewer the fetal kidney begins to function at about the eleventh week of development. The fetal liver is functioning as an excretory organ at 12 weeks. The fetal gastric mucosa contains pepsin at 16 weeks, but no hydrochloric acid even at full term. The fetal pancreas contains both trypsin and trypsinogen at 16 weeks; both are also present at full term. Pancreatic amylase is present at 24 weeks, and pancreatic lipase at 32 weeks. Intestinal ferments are not present at 32 weeks, but enterokinase is present at 8 weeks. The fetal pituitary contains an active principle at 8 weeks. The fetal thyroid is producing colloid-like secretion at 11 weeks. The fetal suprarenal contains adrenin at 16 weeks, but does not give a chromaphil reaction until very much later.

Congenital Occlusion of Common Bile Duct.—Feldman's patient was a twin baby, aged 8 weeks. It was quite clear from the history, the choluria and the fecal acholia, that the case was not one of ordinary, so-called physiologic icterus neonatorum. The absence of jaundice in the other children or near relatives showed that it was not a case of the grave type of familial jaundice. The absence of any history of syphilis in the parents, the health record of the patient's numerous sisters and brothers, and the negative Wassermann reaction in the patient's serum practically certainly excluded syphilitic hepatitis. Septic jaundice could similarly be excluded, for although there had been a discharge from the navel there were no signs suggesting direct relationship between it and the jaundice. Buhl's disease (acute fatty degeneration of the new-born) and Winckel's disease (cyanosis afebrillis icterica cum hemoglobinuria) could also be excluded. The history of "purpura" in the father suggested hemolytic or acholuric family jaundice, but the urine and feces and the normal fragility of the red cells excluded this. The diagnosis, therefore, rested between obstructive jaundice due to obliteration of the bile passages or possibly gallstones, and the so-called nonobstructive or catarrhal jaundice. There was an indirect van den Bergh reaction, but the necropsy disclosed an occlusion of the common bile duct, which Feldman is convinced was of congenital origin.

2: 151-202 (July 26) 1924

Yesterday, Today and Tomorrow. J. B. Hall.—p. 151.
Is Statistical Method of Value in Research? Greenwood.—p. 153.
Use of Insulin. D. M. Lyon.—p. 158.
Treatment of Tuberculosis with Sodium Morrhuate. J. Hume.—p. 162.
*Criteria for Artificial Pneumothorax. R. C. Wingfield and G. S. Wilson.—p. 163.
*Artificial Pneumothorax. L. S. T. Burrell.—p. 167.
*Case of Gaucher's Anemia. N. H. Schuster.—p. 170.

Graduated Exercise for Pneumothorax Patients.—Wingfield and Wilson report the results obtained by the graduated exercise treatment of patients on whom an artificial pneumothorax has been induced either by choice or by necessity. They do not advocate this method, but point out that under it no fewer than 49 per cent. of patients comprising an unselected, consecutive series of cases, have been discharged as much improved and capable of earning their living in the world.

Artificial Pneumothorax.—Burrell sums up his views as follows: Artificial pneumothorax should be regarded not as a cure for tuberculosis of the lung, but as a safe method of resting the diseased part, and it should be used in conjunction with other methods of treatment. The success of the treatment is largely dependent on really keeping the lung at rest, taking each case individually and arranging the dosage and intervals between the refills according to the peculiarities of the individual patient.

Gaucher's Anemia.—The clinical interest of Schuster's case lies in the youthful age of the patient (1 year and 10 months) and in its rapid course. The onset was acute and the child lived only three weeks, having been remarkably well just before. Nearly all previous patients have suffered from epistaxis; in this patient there was no bleeding, but petechiae were present on the abdomen. Death occurred from acute edema of the lung. The histologic findings corresponded to those reported in other cases.

Medical Journal of Australia, Sydney

1: 581-606 (June 14) 1924

*Significance of Double Innervation of Voluntary Muscle. J. I. Hunter.—p. 581.
*Operation of Sympathetic Ramisection. N. D. Royle.—p. 587.
*Operation of Ramisection for Spastic Paralysis. J. I. Hunter.—p. 590.
*Transmission of Pneumococcal Infection. R. Webster.—p. 591.

SUPPLEMENT

Venereal Disease and Abnormal Mind. W. A. T. Lind.—p. 409.
Folin and Wu's Method of Blood Analysis. O. Latham.—p. 412.
Sex in Causation of Mental Psychoses. J. N. McAree.—p. 418.
General Paralysis of Insane. W. E. Jones.—p. 425.
Evolution and Functions of Labyrinth. A. W. Campbell.—p. 428.
Vertigo. A. E. Mills.—p. 429.

Significance of Double Innervation of Muscle.—Hunter reviews researches made on the innervation of voluntary muscle, the significance of the presence of two types of motor nerve endings in voluntary muscle, the ordinary motor end-plates of a medullated fiber and the terminaisons en grappes which are always associated with a nonmedullated fiber. Experimental investigation has proved that the significance of the difference in structure of the two kinds of fibers and of their end-plates, is that the medullated fibers are cerebrospinal fibers. The medullated fibers and their end-plates degenerate after section, leaving the nonmedullated fibers and their terminations intact; on the other hand, the medullated fibers are unharmed while the nonmedullated fibers disappear on removal of the sympathetic ganglia. Then, too, organs exhibit certain postural activities, the result of compensatory muscle action. This activity attains its full development when the muscle is under the influence of its nerve supply. Removal of the sympathetic nerve supply to voluntary muscle abolishes plastic tonus. This occurs in normal, spinal and decerebrate animals. Hence, it can be deduced that the function of the sympathetic innervation of voluntary muscle is to maintain posture once assumed by fixing the muscle fibers at their new length. In this way it is responsible for the lengthening and shortening reactions. Compared with tetanic contraction the maintenance of posture by the sympathetic system, as in natural attitudes of the animal, involves a low expenditure of chemical energy and obvious fatigue is not developed for long periods of time. The cerebrospinal connection of voluntary muscle imposes a posture on the muscle reflexly or by voluntary activity and the sympathetic innervation subserves the function of maintenance of posture. Hunter maintains that, in part, the process of deafferentiation consists of severing the afferent limb of a sympathetic arc and that the efferent limb of this arc is made up of the postganglionic nonmedullated nerve fibers supplying voluntary muscle, for plastic tonus also disappears when ramisection is performed. The deafferented specimen differs from the muscle following sympathetic ramisection in that the knee jerk is absent in the former condition, while it is present, though less exaggerated and without the shortening reaction in the latter. In other words, the jerk element remains after sympathectomy, but disappears when the posterior nerve roots are severed. In decerebrate rigidity both these reflex arcs are released from control. Royle's experiments are the first to show consistent loss of plastic tone in decerebrate rigidity.

Sympathetic Ramisection.—Royle describes at length his technic for performing lumbar ramisection by removing the rami communicantes only. There is no danger of interfering unintentionally with the functions of the intestines or the bladder as long as the medially directed fibers from the second, third and fourth lumbar ganglia are left intact. Division of the abdominal sympathetic trunk below the fourth ganglion only affects the sympathetic fibers traveling with the fifth lumbar and the sacral nerves. The technical details for performing cervical ramisection are also given. Royle's operation was described in an abstract published in THE JOURNAL, March 29, 1924, p. 1082.

Ramisection for Spastic Paralysis.—Hunter reviews the anatomy of the nerves involved in Royle's operation of ramisection, and correlates the anatomic and clinical aspects of the results achieved by such section. Ramisection of the second, third and fourth lumbar ganglia effectively removes the influence of the sympathetic system from the musculature receiving its nerve supply from the upper part of the lumbar

plexus, notably the iliopsoas, quadriceps extensor and the adductors of the thigh, together with the muscles supplied by the contribution of the fourth lumbar nerve to the lumbosacral trunk. At the same time it avoids any injury to the hypogastric nerves which pass medially to communicate with the hypogastric plexus and after relay in the inferior mesenteric ganglion continue to supply the bladder and rectum. However, severing the white rami of the upper lumbar nerves removes part of the influence of the hypogastric nerves, as is exemplified by the increased activity of the pelvic nerves of the parasympathetic system. This relieves constipation. It is possible to avoid injury to the white ramus communicans of the first lumbar nerve. It is larger than the grey ramus (or rami) and cephalad in position and of a firm whitish appearance. Royle cuts the grey ramus, only, when it is not desired to affect the functions of the bladder and rectum. The nerve fibers which constitute the white rami of the second and third lumbar nerves, may be removed on both sides without noticeable effect. The procedure of serving the ganglionated sympathetic cord removes the influence of the sympathetic system conducted by the grey rami below this level to the roots of the lower part of the lumbosacral plexus. Together with removal of the grey ramus of the fourth lumbar nerve, therefore, it affects notably the muscles supplied by the sciatic nerve and its branches, the gluteal muscles and the small lateral rotators of the thigh. At the same time it has no influence on the pelvic nerve of the parasympathetic system. The cells of this nerve are in the intermediate sacral segments of the cord. They are not connected with the ganglionated sympathetic cord, but with small ganglia in the pelvic plexus on the course of the nerves to the viscera innervated by them. Ramisection in the cervical region aims at removing the influence of grey rami on the roots of the branchial plexus. These roots lie behind the scalenus anterior. By tracing the nerves to the intervertebral foramina, Royle has suceeded in obtaining a very complete effect on severing the connections which present themselves.

Transmission of Pneumococcus from Mother to Child.—Webster reports a case in which the Type II pneumococcus was recovered from the pus obtained from the knee joint of a 3 months old infant affected with acute arthritis, and points out especially that contact with Type II pneumococcus occurred between mother and baby and that the mother acted as a "carrier" of Type II pneumococcus for a period of at least twenty-one days. It is submitted that the mother acquired an infection of her respiratory tract by pneumococcus Type II and passed it on to her baby in whom it first appeared as a catarrhal inflammation of the upper air passages and subsequently as a purulent arthritis.

1: 629-646 (June 28) 1924

*Syphilis in Relation to Gastric Disorders. F. S. Hone.—p. 629.
Congenital Hypertrophic Stenosis of Pylorus and Pylorospasm. P. L. Hipsley.—p. 632.
*Aspergillosis of Pleura with Sclerotium Formation. J. B. Cleland.—p. 634.
Mediastinal and Retroperitoneal Lymphogranuloma. A. Goode.—p. 635.
*Hydatidiform Mole of Broad Ligament. J. B. Cleland and N. Wigg.—p. 636.

Syphilis and Gastric Disorders.—Hone cites three cases: one of gastric syphilis simulating carcinoma of the stomach; one of gastric ulcer with symptoms like gastric crises in tabes dorsalis, and a third case in which the whole of the aorta was involved in a process which seemed to be a mixture of a syphilitic process and the ordinary senile arteriosclerosis. Near the pylorus was a large fungating carcinomatous mass 12 cm. (4 inches) in diameter attached to the posterior wall by a wide base. Behind the stomach was a mass of enlarged aortic glands which extended upward to the diaphragm and downward to the bifurcation of the aorta. Section of these showed them to be firm and elastic, and microscopic examination showed both these and the original growth to be carcinomatous in nature.

Aspergillosis of Pleura.—Following an operation for empyema, the result of a gunshot wound, Cleland's patient continued to be ill. Material from the thoracic sac was found to contain an aspergillus resembling *A. fumigatus* and *A. bronchialis*, but the surface mycelial threads and conidiophores were brownish. Hence, this specimen would seem to belong either to a new species or to one not yet known to be pathogenic to man.

Hydatidiform Mole of Broad Ligament.—In view of the history of joint pains, etc., in the case cited by Cleland and Wigg, a tentative diagnosis of acute rheumatism was made and the patient treated accordingly. Against this, however, was the absence of any signs of endocardial affection, in spite of a prolonged history of "rheumatism." Also the nature of the joint affection was not that of rheumatic fever. In a few days nervous symptoms developed; the diagnosis of acute rheumatism was withdrawn and that of tuberculous meningitis considered. The results of lumbar puncture, however, did not uphold this, nor did the periods of quiescence between the rigors. An ordinary vaginal examination did not reveal much beyond retroversion of the uterus. The correct diagnosis was made at the necropsy. The pregnancy seemed to have been located in the extreme end of the left cornu of the uterus and in the adjacent uterine end of the fallopian tube. The remains of placental tissue in the uterine cavity and its wall did not macroscopically or microscopically show definite evidence of hydatidiform change, though there was invasion of the wall by placental tissue. This change was very pronounced in the placental tissue in the fallopian tube and filling the broad ligament. Rupture of the thin covering layer of the broad ligament had given rise to a rapidly fatal intraperitoneal hemorrhage.

2: 1-24 (July 5) 1924

*Differential Leukocyte Percentages of Residents of Brisbane, Queensland. W. C. Sweet.—p. 1.
Puerperal Septicemia. F. S. Taylor-Thomas.—p. 5.
Etiology of Anterior Metatarsalgia. N. D. Royle.—p. 9.
Retroflexion of Iris. A. J. MacDonald.—p. 10.
Amyotrophic Lateral Sclerosis. E. Murphy.—p. 10.

SUPPLEMENT

Insanity in Australian Aboriginal; Evolution of Mental Disease. J. Bostock.—p. 459.
Pyloric Stenosis. S. W. Ferguson.—p. 465.
Congenital Pyloric Stenosis. R. M. Downes.—p. 467.
Tuberculous Cervical Glands. R. M. Downes.—p. 469.
Dysenteric Conditions in Children. E. M. Little and M. J. Ross.—p. 472.
Id. F. H. Beare.—p. 474.
Serum Treatment of Bacillary Dysentery in Children. R. Webster.—p. 475.
Rickets in Australia. E. J. Dalyell.—p. 476.
Rickets. H. M. Mayo.—p. 478.
Id. M. Harper.—p. 479.

Differential Leukocyte Count of Australians.—The grand average of the counts made by Sweet was 52.2 per cent. neutrophil cells, 32.0 per cent. lymphocytes, 6.3 per cent. endothelial leukocytes, 9.1 per cent. eosinophil cells and 0.4 per cent. basophil cells.

Tubercle, London

5: 409-464 (June) 1924

Mortality from Pulmonary Tuberculosis of Men in London in Relation to Age and Occupation. W. B. Knobel.—p. 409.
*Excess of Vitamin B in Treatment of Experimental Tuberculosis. P. W. Basset-Smith and S. R. Gloyne.—p. 420.
Effects of Rebreathed Air on Tuberculous Guinea-Pigs. H. Sewall and H. Gutstein.—p. 426.
Mechanism of Respiratory Tract Infection. A. L. Bloomfield.—p. 438.

Use of Vitamin B in Treatment of Experimental Tuberculosis.—The precise value of vitamin B in the treatment of tuberculosis was made the subject of experimental study by Smith and Gloyne. The animal used was the guinea-pig. All animals were kept in metal cages, given a generous diet of crushed oats and green vegetables, and the vitamin B added as an accessory to the diet. The source of vitamin B utilized was a commercial yeast preparation. The strain of *Bacillus tuberculosis* used was a human strain. Control animals which were infected but not fed yeast were also under observation. The duration of illness of the infected animals was relative to the dose injected, and there was a parallelism between the two series. All animals showed a gain in weight for some weeks following inoculation and then a rapid decline. The yeast-fed animals lived 131 and 138 days, respectively, as against 112 and 160 days' duration of life in the controls. These experiments are recorded solely because of the importance of the whole subject of vitamins in relation to tuberculosis and not for the purpose of drawing conclusions.

Annales des Maladies Vénériennes, Paris

19: 401-480 (June) 1924

*Inherited Syphilis in the Second Generation. G. Higoumenakis.—p. 401. Begun, p. 324.
*Neurorecurrences Under Bismuth. Kislitchenko.—p. 442.
Acute Gonorrhea with Syphilitic Chancre in Urethra. Catzeflis.—p. 456.

Inherited Syphilis in the Second Generation.—Higoumenakis gives the details of nine cases published since 1908 and of thirteen from his own observation, in which the inherited syphilis had flared up in the second generation, even when it had lain latent through the first generation. The Wassermann reaction may be negative, nothwithstanding hemiplegia or other manifestations of the spirochetal lesions. Treatment should be the same as for acquired syphilis, possibly supplemented with organotherapy, as the inherited taint in the second generation is liable to be as grave as in the first generation.

Neurorecurrence Under Treatment of Syphilis.—Kislitchenko reports twelve instances of neurorecurrence under systematic treatment with bismuth.

Archives Urologiques, Paris

4: 101-238, 1924

*Denervation of the Kidneys. P. Flandrin.—p. 101.
Effect of Ligation of Ureter in Dogs. Camossa and Verliac.—p. 169.
*Suppuration Around the Urethra. P. Fouquiau.—p. 201.
Arterial Lesions in Renal Tuberculosis. Berne-Lagarde.—p. 231.

Severing the Nerves in the Pedicle of the Kidney.—Legueu has applied this method of treating nephralgia in eight cases. The pains were completely arrested at once. The results with the earlier, partial denervations were satisfactory in every respect, but in his last case the operation was, perhaps, too complete, and the secreting function of the denervated kidney has been arrested during the month to date. The operation is something like a periarterial sympathectomy, as he shows with sixteen illustrations. Not only pains in the kidney but reflex anuria might be influenced, thus avoiding an operation on the second kidney.

Phlegmonous Periurethritis.—Fouquiau was unable to find any trace of a stricture in 50 per cent. of the twenty cases he reports, and anaerobes were not constantly present.

Bulletin de l'Académie de Médecine, Paris

92: 917-942 (July 22) 1924

Occupational Lead Poisoning. F. Heim et al.—p. 930.
Congenital Debility. G. Salès and P. Vallery-Radot.—p. 932.
*Ultraviolet Rays in Ovarian Insufficiency. J. Saidman.—p. 938.

Ultraviolet Rays in Ovarian Insufficiency.—Saidman treated by ultraviolet rays with good results in seventeen cases of amenorrhea, delayed and painful menses, irregular menstruation in the tuberculous and atrophy of the ovaries after radiotherapy. He uses a slight skin dose, the first exposure involving irradiation of the entire body at a distance of 50 cm. during one to two minutes for each of the three or four fields. In the next exposures the distance is decreased by 5 cm. to a minimum of 30 cm. and the time is increased by a half to one minute to a maximum of ten minutes. If the erythem does not occur in from six to twelve hours, a local irradiation of the hypogastric, thyroid and lumbosacral regions is added.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1091-1116 (July 11) 1924

Spirochetosis Icterohemorrhagiae. M. Garnier.—p. 1092.
*Retrobulbar Neuritis in Multiple Sclerosis. Rivet and Jany.—p. 1093.
Hirsutism, Diabetes and Melanodermia. Labbé and Boulin.—p. 1097.
Thoracoplasty in Tuberculosis. C. F. Gondolfo.—p. 1101.
Radiculitis and Poliomyelitis in Meningitis; Recovery. V. de Lavergne and R. Bize.—p. 1104.
*Gangrene of Pneumococcus Origin. Ardin-Delteil et al.—p. 1107.
Congenital Megacolon. A. Bergé et al.—p. 1111.

Retrobulbar Neuritis in Multiple Sclerosis.—Rivet and Jany report a case of retrobulbar neuritis, with impairment of vision, which disappeared under local treatment, but was followed ten months later by typical symptoms of multiple sclerosis. They warn not to ascribe this first symptom of a multiple sclerosis to a latent sphenoidal sinusitis.

Gangrene of Pneumococcus Origin.—Ardin-Delteil, Lévi-Valensi and de Peretti observed a patient with gangrene of the great toe, occurring during convalescence from pneumonia. Treatment by sodium citrate was efficient.

48: 1117-1182 (July 18) 1924

*Tuberculosis with Diabetes. L. Bernard and M. Salomon.—p. 1118.
Thyroid Treatment in Myxedema. J. Comby.—p. 1122.
Allergy in Diphtheria. Lereboullet and Jeannon.—p. 1123.
Diphtheria and Diphtheria Anatoxin. H. Darré et al.—p. 1137.
*Acute Rheumatism in Tuberculosis. A. Pellé.—p. 1141.
Method of Preparation of Opium. Le Noir and Herissey.—p. 1144.
Cholesterol and Biliary Lithiasis. E. Chabrol et al.—p. 1145.
Myexedema in Dwarf. Puberty Follows Thyroid Treatment. Laignel-Lavastine et al.—p. 1160.
Recklinghausen's Disease. Laignel-Lavastine and Dauptain.—p. 1163.
*The Prognosis in Hypertension. C. Aubertin and E. Rigal.—p. 1167.
Anomaly of the Sacrum. A. Léri et al.—p. 1173.
Stormy Defervescence in Typhoid Fever. G. Caussade et al.—p. 1175.
Dehiscence of Chest Wall from Cancer. Renaud and Chatagnon.—p. 1181.

Pneumothorax in Tuberculosis Combined with Hyperthyroidism.—Bernard and Salomon report a case of goiter associated with diabetes and a tuberculous cavity in one lung. An induced pneumothorax exerted a surprising effect, as the tubercle bacilli and fever disappeared, also the glycosuria.

Tuberculosis and Rheumatism.—Pellé observed acute articular rheumatism in three patients with pulmonary tuberculosis. Absence of tubercle bacilli in the joints, the efficacy of salicylate treatment, and the trend toward recovery suggested the nontuberculous origin of the affection. The acute rheumatism did not produce either antianaphylaxis or aggravation of the tuberculosis.

The Ureosecretory Coefficient in Hypertension.—Aubertin and Rigal's research on forty-four patients showed that a permanent hypertension may coexist with a constantly normal secretion of urea. There is no constant proportion between the two phenomena. As the azotemia is normal in 75 per cent. of such cases, the prognosis may be based on the coefficient. If the ureosecretory coefficient is normal, there need be no restriction of proteins, as complications on the part of the kidney are scarcely likely to occur. The case is grave if the coefficient is high. But in hypertension, even with slight albuminuria, death occurs more frequently from rupture of vessels or insufficiency of the heart, than from uremia.

Comptes Rendus de la Société de Biologie, Paris

91: 421-516 (July 18) 1924. Partial Index

*Colloids and Minerals in Cell. W. Mestrezat and Janet.—p. 428.
*Action of Phagocytosis in Respect to Bismuth. Sazerac and Vaurs.—p. 430.
*Organ Extracts from Starving Animals. P. Carnot and E. Terris.—p. 446.
*Bacteriophage in Treatment of Skin Disease. Gougerot and Peyre.—p. 452.
*Transient Albuminuria in Runners. Labbé et al.—p. 469.
*Action of Formaldehyd on Antibodies. J. Forasman.—p. 471.
Importance of Diphenylamin in Tests for Occult Blood. V. Ciocalteu and C. Nicolesco.—p. 480.
*Vaccination by Way of the Skin. Combiesco and Popesco.—p. 484.
*Action of Papaverin on Stomach. D. Daniélopolu et al.—p. 495.
Respiratory Phenomenon Induced by Compression of Vagus. Daniélopolu et al.—p. 497.
*Neo-Arsphenamin in Malaria. C. Goresco and C. Popesco.—p. 500.
*Bacteriophage in Tonsil Exudate. G. Petrovanu.—p. 502.

Colloids and Minerals in Cell.—Mestrezat and Janet's research proved an interdependence of the colloids and mineral elements in the metabolism of the cell.

Phagocytosis and Bismuth.—Sazerac and Vaurs' experiments on rats and rabbits showed that the action of bismuth on trypanosomes and spirochetes is due to phagocytic activity of the leukocytes. They convert the insoluble bismuth into a soluble product, which exerts a therapeutic effect.

Loss of Weight Through Organ Extracts from Animals in Inanition.—Carnot and Terris found that the injection of an extract of stomach mucosa, from animals in inanition, containing no albumins, produced in a normal rabbit a loss in weight of 525 gm. in twenty-six days. An extract of pancreas tissue (not containing albumin and lipoid) caused one dog to lose a ninth part of its weight. A similar lung extract induced in a rabbit a decrease of one eleventh of its weight in eight days. Use of the muscle and bone marrow of fasting animals did not seem to affect the nutrition. But the extract of lung tissue of an animal that was being fattened produced

a rapid augmentation in weight. The findings may have a therapeutic import in obesity.

The Bacteriophage in Treatment of Skin Diseases.—Gougerot and Peyre treated locally with an antistaphylococcus bacteriophage added to staphylococci isolated from the pustules, four cases of a sycosis with a pustular dermo-epidermitis. A complete recovery in two instances was manifest, and considerable improvement has already been realized in the two still under treatment. Good results have been obtained in treatment of recurring furunculosis.

Albuminuria of Runners.—Labbé, Violle and Nepveux noted in the young and healthy runners, immediately after the race, from traces to 0.05 per cent. of albumin in the urine. The presence of albumin was not in connection with the p_H of the urine, in any respect. They assume that the prolonged exertion, causing exaggerated oxidation in the organism and excessive cellular wastes, may induce a transient change in the kidneys, or changes may occur in the serum albumin, favoring its passage through the kidney, or the repeated jarring of the kidneys from the running may cause congestion in them.

Action of Formaldehyd on Antibodies.—Forssman confirms that the antibodies, except the antitoxins, are sensitive to formaldehyd, and in the same way, he says, as the Bordet-Wassermann substance.

Mechanism of Vaccination by Way of the Skin.—Vaccination against anthrax, by way of the skin, in guinea-pigs proved to Combiesco and Popesco to be not merely a local immunity, restricted to the cells of the skin; other factors are involved. Some organic factors, possibly opsonins, enhance the phagocytic activity.

Action of Papaverin on Contraction of Stomach.—Daniélopolu, Simici and Dimitriu observed that an intravenous injection of from 1 to 3 cg. of papaverin produced in man a stimulation with exaggerated, even spasmodic, contractions of the stomach. This is followed by a paralysis of the stomach, as a transient exhaustion owing to overwork. Action of the papaverin is similar to the effect produced by excitation of the vagus nerve, or excitation of the walls of the stomach.

Neo-Arsphenamin in Malaria.—Goresco and Popesco's opinion is that neo-arsphenamin does not destroy *Plasmodium praecox*, but is an efficient adjuvant to quinin. Weak doses of neo-arsphenamin make evident the presence of hematozoa in cases of malaria, in which examination of blood is negative.

Lysis by Exudates of Sore Throat.—Petrovanu's conclusion is that some exudates of the tonsils, especially in scarlet fever, may exert a lytic action on certain species of the colon bacillus, although the colon bacillus is not present in the throat.

Gynécologie et Obstétrique, Paris

9: 493-568 (June) 1924

*Reactivation of Senile Uterus. P. Moulonguet-Doléris.—p. 493.
*Tardy Cesarean Section. T. Astériades.—p. 515.
Extensive Hysterectomy for Cancer of Cervix. Douay.—p. 519.

Metrorrhagia After the Menopause.—Doléris summarizes 52 observations of reactivation of the senile uterus by an ovarian tumor. The list includes 7 personal cases and 19 from Hartmann's service. In 5 of the total cases the uterine hemorrhage was profuse and did not recur, but generally there was daily dribbling of blood for weeks or months, sometimes with a certain periodicity. Metrorrhagia was noted only in about 25 per cent. of 74 cases of ovarian tumors.

Tardy Cesarean Section.—Astériades ascribes to the Mikulicz drain the successful outcome of the operation in a gravely infected case forty-eight hours after rupture of the membranes, the fourth day of labor. Subtotal hysterectomy followed the cesarean section.

Journal de Chirurgie, Paris

23: 577-700 (June) 1924

*Pedunculated Tumors of Stomach. A. Gosset et al.—p. 577.
*Wedge Resection of Uterus. P. Lecène and F. D'Allaines.—p. 628.

Pedunculated Tumors of the Stomach.—Gosset, Bertrand and Loewy emphasize the benign nature of these tumors, saying that in 27 of the 66 cases they have collected there were absolutely no symptoms to attract attention to the stomach. They tabulate the details of the entire number, and protest against the label "sarcoma" which has generally been applied. Metastasis has never occurred except in cases of malignant degeneration of the primarily benign growth. In 25 of the 57 operations the tumor was removed by merely cutting out the small base in the stomach wall.

Remote Results of Wedge Resection of the Fundus of the Uterus.—The great advantage of this *hystérectomie fundique* is that one or both ovaries are left unmolested. Of the seventy-one women treated in this way for fibroma, extra-uterine pregnancy or salpingitis, forty-seven have been traced to date. The affection for which the operation was done was permanently cured, and menstruation continued in all, but this technic was not applied unless conditions were promising for healing.

Paris Médical

53-80 (July 19) 1924

Surgery of Children and Orthopedics in 1924. A. Mouchet and C. Roederer.—p. 53.
*Nontuberculous Hip Joint Disease. G. Massabuau.—p. 65.
*Renal Tuberculosis in Children. P. Mathieu.—p. 68.
Treatment of Congenital Clubfoot. A. Trèves.—p. 71.
Tardy Traumatic Spondylitis. C. Roederer.—p. 78.

Nontuberculous Hip Joint Disease.—Massabuau's opinion is that a chronic arthritis of the hip may be not only of tuberculous or syphilitic origin, but it also may be a tardy manifestation of an attenuated general infection or an osteomyelitis.

Tuberculosis of the Kidney in Children.—Mathieu reports three cases of renal tuberculosis in children and points out that polyuria with light colored and cloudy urines, lumbar pains, pollakiuria and cystalgia are indications for immediate examination of the urine for tubercle bacilli.

81-92 (July 26) 1924

Reactivation of Wassermann Reaction. R. Krefting.—p. 81.
*Diathermy in Uterine Cancer. H. Bordier.—p. 84.
*Quinin by the Vein in Chronic Malaria. P. Millous.—p. 88.

Diathermy in Cancer of Uterine Cervix.—Bordier extols treatment of cancer of the cervix by diathermy combined with deep radiotherapy. He uses a disk electrode.

Intravenous Injections of Quinin in Malaria.—Millous recalls that intravenous injections of quinin in chronic, and especially in pernicious, malaria are followed by a severe hyperthermic shock, sometimes even collapse, with algidity. But the disturbances are transient, and a complete recovery may occur in cases in which other methods were without results.

Presse Médicale, Paris

32: 629-640 (July 26) 1924

Contracture of Pyramidal Origin. Foix and Chavany.—p. 629.
*Exsanguination-Transfusion in Toxemias. L. Cheinisse.—p. 635.

Exsanguination Transfusion in Toxemias.—Cheinisse says that Robertson's exsanguination transfusion in treatment of accidental or endogenous toxemia is encouraging, and ought to be a routine practice in hospitals. V. Pauchet's occasional failures in the same line of experiences were probably due to the inadequate amounts of blood withdrawn.

32: 641-648 (July 30) 1924

*The Blood Reveals Latent Syphilis. E. Leredde.—p. 641.
Technic for Therapeutic Tracheofistulization. Rosenthal.—p. 644.

The Blood Findings Reveal Latent Inherited Syphilis.—Leredde emphasizes the importance of examination of the blood in latent hereditary syphilis, *cryptosyphilis héréditaire*. In children, adenopathies, adenoids, enlargement of the spleen, hydrocele and congenital malformations should suggest a syphilitic affection. They are indications for examination of the blood, although there may never have been any clinical manifestations of syphilis, and the fixation reaction is negative. Of seventy-one syphilitic children, ranging from 1 to 16 years, not one had a normal blood composition. Anemia, monocytosis and increased proportions of polymorphonuclears are common.

32: 649-656 (Aug. 2) 1924

Syphilis from Medicolegal Standpoint. G. Thibierge.—p. 649.
*Subacute Inguinal Lymphogranulomatosis. M. Favre.—p. 651.
Specific Streptococcus in Scarlet Fever. J. Mouzon.—p. 652.

Etiology of Inguinal Lymphogranulomatosis. — Favre declares that the subacute inguinal lymphogranulomatosis which, he says, is the same as climatic bubo, is a specific genital disease, a clinical entity.

Revue Franç. de Gynécologie et d'Obstét., Paris

19: 337-368 (June 10) 1924

Dysmenorrhea and Anaphylaxis. P. Dalché.—p. 337.
*Menstruation as a Form of Anaphylaxis. P. Carlini.—p. 345.
Acute Amaurosis in Pregnancy. L. Roudke and R. Sliwinski.—p. 347.
*Pituitary Treatment in Obstetrics. E. Gaujoux and Matet.—p. 350.

Menstruation as a Form of Anaphylaxis.—Carlini's opinion is that menstruation is a biologic process analogous to anaphylactic shock. It induces also the retrogression of the corpus luteum. The changes in the uterine mucosa, and other signs of the maturing ovum are produced by a second, less intense anaphylactic shock from resorption of elements of the ovum. This may explain so-called essential metrorrhagia and menorrhagia, and suggest effectual treatment by measures to induce antianaphylaxis.

Pituitary Extract in Obstetrics.—Gaujoux and Matet relate three instances of death of the fetus and two cases of rupture of the uterus after injections of pituitary extract.

Schweizerische medizinische Wochenschrift, Basel

54: 625-648 (July 10) 1924

Action of Warm Mineral Waters on Circulation. Kornmann.—p. 625.
*Postoperative Stage of Empyema. L. Hofbauer.—p. 632.
*Transillumination of Sinuses. A. Junod.—p. 636.
*Late Metastasis of Thyroid Sarcoma. Cornioley.—p. 638.

Postoperative Stage of Empyema.—Hofbauer examined empyema patients who had been treated with Bülau's siphon drainage. Some of them had a sensation of oppression and grave dyspnea when they inclined the thorax or lay on the affected or healthy side. In all of them the diaphragm was adherent to the lateral wall of the chest. The phrenicocostal angle had disappeared. Gradually increasing exercise stretched the adhesions sufficiently to make the patients comfortable. Many persistent suppurations are due to the presence of a foreign body in the pleural cavity.

Transillumination of Sinuses.—Junod finds transillumination useless in diagnosis of affections of the frontal sinus. It may be helpful in disease of the maxillary sinus, especially with practitioners who cannot use the roentgen rays.

Late Metastasis of Thyroid Sarcoma.—Cornioley describes a case of multiple sarcomas of the intestine and extremities occurring nine years after removal of a sarcoma of the thyroid.

54: 693-712 (July 31) 1924

Sedimentation Test in Gynecology. O. Burckhardt-Socin.—p. 693.
*Closed Tuberculous Cavity in Kidney. R. Allemann.—p. 696.
Congenital Stenosis of Aortic Conus. H. Müller, Jr.—p. 702.
*Typhoid and Syphilis in Infant. D. Vischer.—p. 706.

Closed Tuberculous Cavity in Kidney.—Allemann reports on three cases of closed tuberculous cavities in the kidneys. Two of them could have been considered as instances of alleged spontaneous healing (autonephrectomy). In spite of this, one patient died after the operation with signs of acute insufficiency of the suprarenal capsules (one was caseous and was removed). The other died from mixed infection and peritonitis.

Typhoid and Syphilis in Infant.—Vischer reports the history and necropsy findings in a case of congenital syphilis with typhoid in an infant 11 weeks old.

Policlinico, Rome

31: 965-1000 (July 28) 1924

Cultivation of Intestinal Protozoa. V. Puntoni.—p. 965.
*Cultivation of Spirochaeta Icterohemorrhagiae. V. Vanni.—p. 966.
Case of Meningeal Hemorrhage. E. Caradonna.—p. 968.
Syphilitic Meningitis and Second Generation of Inherited Syphilis. A. Guerricchio.—p. 972.
Vaccine Therapy of Typhoid. D. Clemente.—p. 976.

Cultivation of Spirochaeta Icterohemorrhagiae.—Vanni incubates pieces of liver from infected guinea-pigs at 37 C. with equal amounts (5 c.c.) of physiologic sodium chlorid solution and horse serum. He covers the fluid with from 1 to 2 c.c. of nonsterilized liquid petrolatum. The resulting symbiosis with bacilli seems to be favorable: The spirochetes grow rapidly (in three days) at body temperature (instead of at 22 C.) and keep their virulence for two years if transplanted every three months. The experiments were also positive with the alkalinized urine from infected guinea-pigs. Consequently the method might be used for diagnostic purposes with human urine.

Riforma Medica, Naples

40: 649-672 (July 14) 1924

*Kaolin Sedimentation Test. G. Pennetti.—p. 649.
Friedreich's Disease with Pluriglandular Syndrome. Corona.—p. 651.
Artificial Pneumothorax. G. Breccia.—p. 656.

Kaolin Sedimentation Test.—Pennetti followed Pitimada in using a kaolin suspension instead of erythrocytes to test the suspension stability in the serum. The sedimentation took on an average ten minutes in water and five minutes in the blood serum from healthy men and four minutes in women. In patients with cancer, tuberculosis, syphilis, acute infections and other diseases the speed was increased to three minutes. The supernatant serum used for a second test caused delayed sedimentation.

40: 673-696 (July 21) 1924

Farewell Address. E. Maragliano.—p. 673.
*Occult Bleeding. E. U. Fittipaldi.—p. 677.
*Tuberculosis and Anaphylaxis. P. Brusa.—p. 679.
*Hypernephroma with Hemolytic Anemia. L. Lenaz.—p. 681.

Occult Bleeding.—Fittipaldi claims priority in using strong alkalis for extraction of feces and stomach contents. The hemochromogen resulting from this extraction gives the most pronounced spectrum of all the products of hemoglobin.

Tuberculosis and Anaphylaxis.—Brusa's experiments on uteri of guinea-pigs speak against the identity of anaphylaxis and the tuberculin reaction: Uteri of animals injected previously with tuberculin or infected with tubercle bacilli did not respond to the injection of tuberculin nor of these bacilli. Serum from children with a strong cutaneous reaction failed to produce in guinea-pigs a passive anaphylaxis to tuberculin or to a suspension of tubercle bacilli.

Hypernephroma with Hemolytic Anemia.—Lenaz reports the history of a woman, aged 52, with signs of hemolytic anemia (lowered osmotic resistance and urobilinuria, but low color index). A movable tumor in the left hypochondrium simulated an enlarged spleen. Biopsy revealed a hypernephroma instead.

Rivista Critica di Clinica Medica, Florence

25: 185-208, 1924

Jaundice During Arsphenamin Treatment. G. Natali.—p. 185.
*Tubercle Bacilli in Body Fluids. F. Venier.—p. 193.

Determination of Tubercle Bacilli in Body Fluids.—Venier extols the value of iron hydroxid as a test for body fluids. In contact with a few drops of it, the urine and the cerebrospinal fluid behave like an electronegative solution, rapidly precipitating the hydroxid. It carries the tubercle bacilli down with it. He has found this technic successful when all others had failed.

Anales de la Facultad de Medicina, Lima

6: 157-264, 1924

*The Colon Bacillus. R. Rebagliati.—p. 157.
The Teaching of Clinical Radiology. E. Campodónico.—p. 167.
Radiology of Upper Alimentary Tract. Idem.—p. 180.
*Peruvian Verruca. P. S. Mimbela.—p. 192.
*Pneumococcus Meningitis. C. A. Arméstar Valverde.—p. 211.

The Colon Bacillus.—Rebagliati presents evidence to confirm the aggravating influence of mixed infection with the colon bacillus in diphtheria and other diseases and infectious processes.

Peruvian Verruca.—Mimbela accepts that Oroya fever and Peruvian verruca are different phases of the same infection. Vague symptoms, fever and rapid anemia label the case at once when it is known that the patient has come from the one known narrow zone in the world in which the disease is endemic.

Pneumococcus Meningitis.—Arméstar relates that the pneumococcus meningitis was generally secondary to pneumonia, and ran its fatal course in from twelve to forty-eight hours. Only one of his twelve patients recovered. Pneumococcus antiserum seemed to fail completely in these meningeal manifestations, as also in the cases of primary pneumococcus meningitis.

Brazil-Medico, Rio de Janeiro

2: 1-14 (July 5) 1924

*Pathologic Physiology of Diabetes. A. L. Pimenta Bueno.—p. 1.
Rhodnius Pictipes in Northern Brazil. A. da Matta.—p. 8.
Case of Orbital Abscess. E. Campos.—p. 8.
Recent Medical Literature in France. Desaux and Trolard.—p. 9. Cont'n.

The Pathologic Physiology of Diabetes.—Pimenta Bueno reiterates that all the facts of spontaneous and experimental diabetes and phlorizin glycosuria are explained by a temporary or permanent vasoconstriction of the capillaries in the liver. The blood thus partly shut out of the liver is diverted in excess to the kidneys.

2: 15-28 (July 12) 1924

*Serodiagnosis of Bacillary Dysentery. A. Guimarães.—p. 15.

Serodiagnosis of Bacillary Dysentery.—Guimarães states that macroscopic agglutination is more reliable than the microscopic in the diagnosis of bacillary dysentery and detection of carriers. The test was positive by the seventh day of the disease in his experience, and in 75 per cent. of the cases examined early in the epidemics, but only in 37 per cent. after the epidemic had been under way for six months. The colon bacillus causes secondary infection but may become so virulent that it induces a primary epidemic of colitis in its turn. This may simulate typhoid fever and can be differentiated only by sero-agglutination tests.

Semana Médica, Buenos Aires

31: 53-120 (July 10) 1924

Inaugural Lecture in Legal Medicine. Nerio Rojas.—p. 53.
*Asphyxia Neonatorum. R. Bustos Morón.—p. 58.
Life Extension. B. A. Houssay.—p. 59.
Actinomycosis in Left Iliac Fossa. J. R. Goyena.—p. 67.
Prophylaxis and Treatment of Tuberculosis. F. Etcheverry Boneo.—p. 75.
Roentgenography of Cavities in Lung. A. Bergman.—p. 83.
Roentgenography of Pneumonia. C. Heuser.—p. 91.
"Therapeutic Electrocoagulation." E. Cisneros.—p. 94.
Tests for Vitamins. Sagastume and Spegazzini.—p. 100.

Treatment of Asphyxia Neonatorum.—Bustos Morón relates that for years he has been using the technic recently described by Baumm (summarized in these columns, July 12, 1924, p. 161). It frequently succeeds when all else fails, but he adds that Baumm did not emphasize enough the extreme care necessary to sustain the head of the child with the fingers to avoid too much jerking of the neck.

Siglo Médico, Madrid

74: 85-112 (July 26) 1924

*Gage for Roentgen Rays. J. and S. Ratera.—p. 85.
*Roentgen Rays in Treatment of Infectious Diseases. Piga.—p. 87.
Tuberculosis in Spain. R. Villegas.—p. 90. Conc'n.
Traumatism from Coitus. I. Fedriani.—p. 91.
*Etiology of Epilepsy. C. Juarros.—p. 92. Begun, p. 29.

Gage for Roentgen Rays.—The Rateras use disks of wax to gage the rays, a mixture of 8 parts wax, 10 parts of paraffin and 2 of liquid petrolatum, with an iontoquantimeter.

Radiotherapy in Infectious and Parasitic Diseases.—Piga refers in particular to the application of the roentgen rays according to Pais' method in Italy. Pais aims to stimulate the function of the tissues with an amount of the rays too small to induce even microscopic change—not more than one five hundredth of the skin dose. This treatment has been systematically organized in the marshes around Rome to supplement quinin treatment of malaria, and Piga was much impressed with the results during his recent trips to Italy.

Etiology of Epilepsy.—Juarros gives summaries of the various theories that have been presented to explain epilepsy, listing 262 publications in the last decade. Sifting them all merely confirms that almost any cause is liable to induce convulsions, but for the convulsions to be epilepsy, there must be some constitutional mental predisposition, and this he ascribes to some developmental defect in the brain.

Archiv für Verdauungs-Krankheiten, Berlin

33: 117-226 (June) 1924

*Influence of Fats on Gastric Secretion. Kalk and Dissé.—p. 117.
*Connection of Ulcer with Excess of Pepsin. A. Günzburg.—p. 133.
Test for Lactic Acid in Gastric Juice. I. Boas.—p. 146.
*Pyrosis and Yawning. Crämer.—p. 149.
Saliva and Diseases of Digestive Tract. L. Strauss.—p. 163.
Vegetable Test Meal. B. Capaldi.—p. 181.
Chronic Disease of Bile Ducts Without Calculi. L. v. Aldor.—p. 187.
Chronic Amebiasis. H. Heinemann.—p. 203.
The History of Diabetes. E. Ebstein.—p. 215.

Influence of Fats on Gastric Secretion.—Sesame oil, administered by Kalk and Dissé half an hour before the alcohol test breakfast, slightly decreased the acidity and reduced secretion and evacuation time, due to an earlier and increased reflux from the duodenum. Margarin prolonged the emptying time, and rancid margarin increased the acidity while reducing the evacuation and secretion time.

Connection of Gastric Ulcer with Excessive Proportions of Pepsin.—Günzburg investigated the gastric juice of the fasting stomach, which contains pepsin by adsorption on mucus. In tests on 350 patients, fully 66 per cent. of the group showing extra potent pepsin content proved to be ulcer cases, and hyperpepsinia was noted in forty-eight patients of fifty-five with ulcer of the stomach. In his opinion the excess of pepsin creates a predisposition to ulcer. In cases of hyperpepsinia with pain he uses atropin with good result.

Heart-Burn and Yawning.—Crämer admits that heart-burn is hereditary. He assumes that it is caused by some endocrine disturbance, and has found guaiacol carbonate effectual after failure of other measures. His observation of 100 patients proved that a tendency to morbid yawning may be produced by an insufficient evacuation of stools and gas, and consequent excessive increase of gas-forming bacteria. It is a manifestation of a disturbed sympathetic system due to bacterial intoxication.

Deutsche medizinische Wochenschrift, Leipzig

50: 1007-1038 (July 25) 1924

*Biology and Treatment of Uterine Cancer. A. Mayer.—p. 1009.
*Paratyphoid B. E. Fraenkel and H. Much.—p. 1010.
*Action of Salts on Liver and Pancreas Secretion. H. Simon.—p. 1012.
*Treatment of Encephalitis. Buss and Peltzer.—p. 1014.
*Intestinal Changes in Agranulocytosis. E. Petri.—p. 1017.
*Corns. H. Engel.—p. 1018.
Artificial Pneumothorax. J. Neumayer.—p. 1021.
Cerebrospinal Fluid. W. Weigeldt.—p. 1023.
"Photodynamic Phenomena." A. Passow.—p. 1023.
Survey on Neurology. H. G. Creutzfeld.—p. 1024.
Measure and Weight Statistics of Schoolchildren. Prinzing.—p. 1026.
American Mortality Statistics. Prinzing.—p. 1027.
Ants as Suture Material. Dieterich.—p. 1030.

Biology and Treatment of Uterine Cancer.—Mayer's statistics show that cancer of the uterus in pregnancy has a rather better prognosis than in the nonpregnant. Gross believes that this is due to its earlier recognition. The author found that 45 per cent. of the women with uterine cancer had not begun to menstruate before the age of 17 years. This speaks for a hypoplasia of the sex organs as a predisposing factor. He uses roentgen rays before the operation. This improved the primary mortality to 7.4 per cent., chiefly because the gangrenous parts heal.

Paratyphoid B and Breslau Gastro-Enteritis.—Fraenkel and Much conclude from their clinical, anatomic and serologic findings that the so-called Breslau gastro-enteritis strain is identical with paratyphoid B bacilli.

Action of Salts on Liver and Pancreas Secretion.—Simon introduced solutions of sodium sulphate and magnesium sulphate and of the salts of Karlovy Vary (Carlsbad) into the duodenum. He found an increased secretion of bile and pancreatic juice. The amount of ferments was increased except in a patient with chronic diarrhea, another with chronic pancreatitis and a third with pernicious anemia.

Treatment of Encephalitis.—Buss and Peltzer had excellent results in sixteen encephalitis patients with intravenous injections of large doses of trypaflavin (acriflavin) especially in the early stage.

Intestinal Changes in Agranulocytosis.—Petri describes the case of a middle-aged woman who had slight fever for several months. She died with the typical signs of agranulo-

cytic angina (extreme leukopenia with loss of granulocytes, icterus, necrotic tonsillitis). The necrotic changes were pronounced in the whole digestive tract.

Corns.—Engel recommends resection of a part of the basal phalanx in treatment of corns.

Jahrbuch für Kinderheilkunde, Berlin

106: 65-174 (June) 1924

*Serology of Edematous Conditions. Leichtentritt and Zweig.—p. 65.
*Treatment of Tetany. Scheer, Müller and Salomon.—p. 85.
*Lipase in Breast Milk. W. Gottstein.—p. 97.
*Protein Digestion in Infants. Freudenberg and Stern.—p. 109.
Mechanism of Actual Acidity in Infant Stomach. H. Behrendt.—p. 115.
*Carbonate Tension in Blood and Cerebrospinal Fluid in Various Diseases in Children. Z. v. Bokay.—p. 120.
Peculiar Malformation of Nose. I. Menyhard.—p. 128.
The Constitution and Nutrition Question. Plantenga.—p. 130.
Findings in Fluids in Acute Articular Rheumatism. Petheö.—p. 141.
Pathogenesis of Acute Digestive Disturbance. XIII. Catel.—p. 145.

Biologic Classification of Edematous Conditions in Children.—Leichtentritt and Zweig reaffirm the important influence of vitamins on the growth of bacteria. In their research, addition of lemon juice to the cultures speeded up the growth, and feeding lemon juice to guinea-pigs with experimental tuberculosis seemed to transform the disease from the septic, toxic form to a slow chronic form, the virulence of the tubercle bacilli having evidently undergone some modification. In serum from persons with deficiency diseases, diphtheria bacilli grew differently from the growth in normal serums. The bacilli showed evidences of characteristic degeneration. They had no opportunity to examine cases of scurvy, but in the other instances of deficiency disturbances, this behavior of the diphtheria bacilli drew a sharp line of demarcation between them and diseases in which avitaminosis was not a factor, even with apparently identical clinical pictures, as in edema from heart or kidney disease and in tuberculosis with or without edema. The serum from all the children with severe alimentary edema showed pronounced degeneration of the diphtheria bacilli, and when this occurred in the course of any disease, it was explained by some dietetic deficiency underlying or superposed on the disease.

Dietetic Treatment of Tetany.—Scheer, Müller and Salomon reiterate that the hydrochloric-acid milk they advocate in prophylaxis and treatment of spasmophilia reduces secretion in the stomach, insures optimal conditions for the action of ferments, and promotes diuresis. It is prepared by adding 400 c.c. of decinormal hydrochloric acid solution to 600 c.c. of whole milk, with 5 per cent. sugar. If this is too large an amount of fluid, they give the same amount of acid in 40 c.c. of normal hydrochloric acid solution; in this event the milk has to be first brought to boiling point and cooled, and the acid is added a drop at a time, stirring constantly. Milk thus prepared forms fine clots and passes through several layers of gauze without residue. Proliferation of bacteria is not to be feared with the p_H of 3.7 to 4. Children like it better than buttermilk. The acid is not free but is in the form of phosphates, citrates, etc. They have never seen any harm result from its use, even in one case in which it was taken for three months. The tabulated findings show that it modifies the metabolism considerably, but it is hard to tell which of the changes induced is responsible for the unmistakable benefit, the "positive antispasmogenic action."

Lipase in Human Milk.—Gottstein confirms that after coagulation of the casein in breast milk, favorable conditions for the action of the milk lipase and the stomach lipase then ensue. Breast milk whey, contrary to cow's milk lipase, promotes the action of the stomach lipase.

Digestion of Protein by Infants.—The research reported by Freudenberg and Stern on the duodenal juice of healthy infants, breast fed or artificially fed, failed to demonstrate any difference in the ferment action on human or cow's milk.

Klinische Wochenschrift, Berlin

3: 1385-1424 (July 29) 1924

*Clinical Significance of Insulin. W. Falta.—p. 1385.
*Heart and Vessel Tonus. R. Ohm.—p. 1389.
*Phosphoric and Lactic Acid in Muscles. G. Embden.—p. 1393.
*Action of Oat-Bran Extracts. E. Boden et al.—p. 1396.
*Water Metabolism. P. Saxl and F. Donath.—p. 1397.
*Latent Paresis. H. Zingerle.—p. 1399.
*Kahn's Reaction and the Blood Sugar. F. Bernhard.—p. 1402.
*Action of Iodin. H. Ephraim.—p. 1402.
"Vulvovaginitis of Little Girls." Kruspe.—p. 1403. Reply. Müller.—p. 1404.
*Extrahepatic Action of Insulin. E. Frank et al.—p. 1404.
*Shock After Formaldehyd Injections. H. Dold.—p. 1405.
*Vestibular Reaction. Fischer and Wodak.—p. 1406.
Serum Sickness. K. Ochsenius.—p. 1407.
Hemoptysis. G. Schröder.—p. 1408. Conc'n.
Height and Weight of Berlin Children. K. Freudenberg.—p. 1411.

Clinical Significance of Insulin.—Falta finds that the discovery of insulin has not changed the views on the pathogenesis of diabetes. Many divergences of opinion are due to overlooking the varying carbohydrate content of the organism. He is strictly opposed to the theory of the fatty acid-glucose ratio. The results of Petrén's diet demonstrate the possibility of avoiding acidosis from a high fat diet by restriction of the protein intake. He believes that the proteins provoke formation of acetone bodies from fat in carbohydrate deficiency. He found it advantageous to divide large insulin doses into four parts—the last to be given before midnight. He was always opposed to artificial abortion in diabetes because he saw good results with a rational diet. Insulin makes such indications entirely superfluous. Insulin lowers the blood sugar more than diet alone, and procures a better rest for the pancreas.

Heart and Vessel Tonus.—Ohm reviews the results of his photographic registration of the jugular pulse. He found in some alleged neurasthenics and patients with "heart cramps" distinct indications of an increased or decreased tonus of the heart action. The contractions are very rapid ("jumping") in the latter and slow in the former. The intervals between the contractions of the auricle are prolonged in the hypertonic form.

Phosphoric and Lactic Acid in Muscles.—Embden reports on the new investigations of his pupils on muscle contraction. They found an identity of lactacidogen with the hexosediphosphoric acid occurring in fermentations. At least twenty times more phosphoric than lactic acid is split off at the beginning of a contraction. The phosphoric acid quickly becomes resynthesized except in prolonged repetition of contractions. The lactic acid increases progressively sometimes even after tetanus. It seems that phosphoric acid is of importance for the rapidity of a contraction and lactic acid for maintaining it. Therefore the former decreases in tetanus of a muscle while the latter increases.

Action of Oat-Bran Extracts.—Boden, Neukirch and Wankell extracted oat-bran with acid alcohol. Four cubic centimeters of a watery solution representing 10 gm. of the bran, produced hypoglycemia in rabbits. In man the action on acidosis was more marked than on glycosuria.

Water Metabolism and Reticulo-Endothelial System.—Saxl and Donath found that infusion of salt solution causes more pronounced hydremia in rabbits injected from ten minutes to three hours before with colloidal silver. Such injections lower the water test diuresis in healthy human subjects.

Latent Paresis.—Zingerle describes a simple means to reveal a latent paresis in beginning affections of the pyramidal system and the cerebellum: The extended extremity of the patient begins to sink as soon as he closes his eyes. If counter pressure is applied, the difference in force is much more evident than with the eyes open. The correction with open eyes does not seem to be a conscious act. The author claims that his symptom appears earlier than the subjective feeling of weakness, the Babinski reflex or other signs.

Kahn's Reaction and Blood Sugar.—Bernhard noted a parallelism between Kahn's reaction and hyperglycemia in patients with neoplasms and grave tuberculosis. Both changes, as well as the increased phosphate content of the erythrocytes, depend on the cachexia.

Action of Iodin.—Ephraim found an increased sedimentation speed in four out of five patients who had been taking 0.5 gm. potassium iodid three times a day for fourteen days. He attributes it to a change of the surface tension of the erythrocytes.

Extrahepatic Action of Insulin.—Frank, Nothmann and Wagner had observed in normal rabbits a marked difference

in the blood sugar content of the femoral artery and vein after intra-arterial injection of insulin. They obtained the same result in pancreatectomized dogs. Therefore, insulin may act directly on the periphery (muscles) even in diabetic animals.

Shock After Formaldehyd Injections.—Dold produced symptoms resembling anaphylactic shock with injections of small amounts of formaldehyd. If it was mixed with serum and left for twenty-four hours the action was weaker. He explains it as direct irritation of the endothelial cells. No leukopenia nor lack of complement was produced.

Vestibular Reactions with Simultaneous Lavage of Both Ears.—Fischer and Wodak perfuse both ears of a subject in upright position and with closed eyes with 100 c.c. of water at 20 C. The subject falls forward after a few seconds, having a feeling of propulsion. Later a phase of retropulsion appears, and changes again. When warm water is used, the sequence of symptoms is the reverse. Changes of the position of the head produce falling in the opposite direction except in a "neutral" position (angle of from 15 to 30 degrees forward). They call these phenomena "vestibular pulsion reflexes."

Medizinische Klinik, Berlin

20: 1027-1062 (July 27) 1924

*Treatment of Epidemic Encephalitis. F. Stern.—p. 1027.
*The Hemoclastic Crisis. M. Kappis and F. Gerlach.—p. 1031.
*Occult Tuberculosis in Children. K. Schroeder.—p. 1035.
*Cervical Ribs. W. Seyfert.—p. 1035.
Modification of Butter-Flour-Milk (Moro). O. Göttche.—p. 1039.
*Differential Blood Count with Gastric Ulcer. G. Martino.—p. 1040.
Protein Therapy of Pernicious Anemia. Z. Rausch.—p. 1042.
Cosmetic Surgery of Nose and Ear. E. Wodak.—p. 1042.
*Injection Treatment of Hydrocele. Rheins.—p. 1044.
*Active Typhus Immunity. R. Weigl.—p. 1046.
Progress in Roentgen Diagnosis. L. Freund.—p. 1049.
Insurance and Ticket System in Switzerland. Hediger.—p. 1061.

Treatment of Epidemic Encephalitis.—Stern injects from 50 to 80 c.c. or more of convalescents' serum intramuscularly in encephalitis. Of the twenty-seven patients in the acute or subacute stage who were thus treated, one died. None of them had any sequelae which occur otherwise in 40 per cent. of patients. The amelioration was extremely rapid in some cases. Nonspecific serum has some results. He classes Rosenow's serum in the latter group. Chronic cases may be treated with large doses of arsenic, milk injections and scopolamin and atropin.

The Hemoclastic Crisis.—Kappis and Gerlach found leukopenia in simple successive cell counts without having to make any injection. The changes in the peripheral count in the skin and in a mesenteric vessel were frequently parallel. The simultaneous counts on both ears differed widely. The venous blood was less variable.

Occult Tuberculosis in Children.—Schroeder uses the intracutaneous reaction with tuberculin concentrations increasing from 1:1,000 to 1:10. He estimates the gain in positive results as 20 per cent.

Cervical Ribs.—Seyfert reports the histories of two women with paresis of the brachial plexus due to cervical ribs. One of them had trophic lesions and compression of the subclavian artery. Cicatricial retraction after thyroidectomy seems to have been the provoking agent in the other. Both patients recovered after resection of the cervical ribs.

Differential Blood Count with Gastric Ulcer.—Martino found no characteristic differential counts in gastric ulcer patients. Eosinophilia was present in some of them.

Injection Treatment of Hydrocele.—Rheins confirms the good results of injection of from 5 to 12 gm. of tincture of iodin in hydrocele. A preliminary morphin injection is advisable in some patients.

Active Typhus Immunity.—Weigl found only a relative typhus immunity in guinea-pigs previously infected with *Rickettsia prowazeki*. He reports on two typhus infections (one grave) among his co-workers who had had typhus fever five and three years previously. They were feeding daily up to 1,000 infected lice, and reinfected themselves. He observed on himself and other supposedly immune persons, feeding such lice, an undiagnosed affection with high fever lasting up to three days. He believes that an immune person may be a dangerous carrier of typhus.

Mitteil. a. d. Grenzgeb. d. Med. und Chir., Jena

37: 385-544, 1924

Gallstones: Origin and Structure. R. Torinoumi.—p. 385.
Secretion of Bile. Walzel and Weltmann.—p. 437.
The Obstructing Gallstone and Its Importance for Cholelithiasis. B. Naunyn.—p. 464.
Tissue Changes Induced by Ascarids. M. Yamauchi.—p. 469.
Physiologic Value of Goiters. M. Branovacky.—p. 488.
Experimental Study of Gallbladder Function. Demel and Brummelkamp. —p. 515.
Indications for Exploratory Laparotomy. E. Just.—p. 526.

Münchener medizinische Wochenschrift, Munich

71: 1009-1048 (July 25) 1924

*Species of Streptococci. Schottmüller.—p. 1009.
*Lipoid Treatment and Organ Stimulation. H. Much.—p. 1010.
So-Called Rabbits' Syphilis. A. Seitz.—p. 1012.
*Plethysmographic Heart Function Test. W. Frey and H. Löhr.—p. 1014.
*Disturbance of Cystin Metabolism. G. O. E. Lignac.—p. 1016.
*Hamburger's Percutaneous Tuberculin Reaction. A. Wallgren.—p. 1017.
*Heart Sounds in Infectious Diseases. J. Schwarzmann.—p. 1018.
Human Skin Pigment. C. Moncorps.—p. 1019.
*Intestinal Influenza in Infants. A. Uffenheimer.—p. 1021.
Criticism of Biologic Terms. K. W. Clauberg.—p. 1022.
Helsley's Guide for the Gastroscope. R. Schindler.—p. 1026.
Subtrochanter Osteotomy. J. Elsner.—p. 1027.
*Hidden Cancer. G. Ledderhose.—p. 1027.
Population Statistics. E. Maurer.—p. 1029.
Expert Evaluation of Internal Sequelae of Injuries. Sittmann.—p. 1030.

Species of Streptococci.—Schottmüller considers differentiation of various species of streptococci as important as differentiation between any germs. His anaerobic streptococcus putrificus is the cause of more than one third of the puerperal infections. In the thirty years of his continuous observation he has yet to see a single instance in which a streptococcus (hemolytic, for example) had changed in human beings into another form (the viridans, for example). He has never denied that the latter may have some hemolytic action. Ruge's and Philipp's methods of prognosis of infections from the bactericidal action of the serum are regarded skeptically both for theoretical reasons and on the basis of his diverging results. The site of the infection and not the bactericidal action of the blood determines the outcome.

Lipoid Treatment and Organ Stimulation.—Much discusses the importance of lipoids for immunity and the endocrines.

Plethysmographic Heart Function Test.—Frey and Löhr used Weber's plethysmographic method on twenty patients with disease of the heart and on five controls. In a healthy person the volume of an arm should increase, according to Weber, after a few movements of one foot. In heart decompensation, the volume should decrease. The authors found the latter symptoms in some healthy men, particularly in those with vagotonia. The whole test depends chiefly on the function of the blood vessels and their nerves and only secondarily on the alteration of vasomotor centers by a cardiac affection.

Disturbance of Cystin Metabolism.—Lignac discovered in the organs of two boys (2 and 3 years of age) multiple deposits of cystin. Both died from atrophy—one with pyelitis and otitis, the other with glycosuria.

Hamburger's Percutaneous Tuberculin Reaction.—Wallgren applied Hamburger's percutaneous tuberculin test to 936 children, using the Pirquet test as a control. He found the percutaneous test at least as valuable, if made exactly according to Hamburger's directions.

Heart Sounds in Infectious Diseases.—Schwarzmann observed a shortened and less loud first sound as a sign of toxic influence on the heart in infectious diseases. A very low and short first sound, almost immediately followed by the second, occurs with a more marked affection of the systolic force. If it occurs with tachycardia, the prognosis is serious.

Intestinal Influenza in Infants.—Uffenheimer observed grave gastro-intestinal symptoms in sixteen well fed infants, some of them exclusively breast fed. Five of them died. He considers influenza as the probable cause.

Hidden Cancer.—Ledderhose observed an infiltrating cancer of the breast in an intelligent woman who had not noticed

its development. Skin cancer retracts and remains for a long time unrecognized. Syphilitic gummas of the tongue have been only too frequently operated on. Tumors in the upper cervical trigonum may be metastases from a small primary cancer in the pharynx or esophagus. The navel often contains a metastasis from any tumor of the abdomen. One third of prostatic cancers form bone metastases before making any appreciable subjective disturbance. Rectal cancers last usually for a year before they are diagnosed.

71: 1049-1084 (Aug. 1) 1924

*The Abdominal Vessels in Hypertension. M. Brogsitter.—p. 1049.
*Functional Correction of Deformities. H. Spitzy.—p. 1051.
Vertebral Metastases from Latent Source. T. Scholz.—p. 1052.
*Surgery of Uterine Cancer. J. Thies.—p. 1054.
*Treatment of Puerperal Fever. H. Kiehne.—p. 1056.
*Latent Febrile Herpes. P. Bastai and A. Busacca.—p. 1056.
*Virus of Herpes. W. Grüter.—p. 1058.
Hohn's Modification of the Meinicke Reaction. K. L. Pesch and H. Schütt.—p. 1060.
Influenza Meningitis. R. Leuchtenberger.—p. 1061.
Steam Douche as Adjuvant in Treatment. Fritz.—p. 1062
Color Index. H. Ratig.—p. 1064.
The Augsburg Medical Society, 1582. O. Renner.—p. 1065.
*Reduction of Incarcerated Hernia. A. Krecke.—p. 1066.
Vocational Tests. Fürst.—p. 1068.
Examinations for Medical Degree. Kerschensteiner.—p. 1070.

The Abdominal Vessels in Hypertension.—Brogsitter examined the abdominal vessels in thirty-three cases of permanent hypertension (between 200 and 300 mm. of mercury). There was no relation at all between the height and duration of the blood pressure and the changes in the mesenteric vessels. Most of the arterioles of the kidneys may be completely obliterated while the mesenteric arteries of the same caliber are still almost intact.

Functional Correction of Deformities.—Since 1913 Spitzy has been using a device for treatment of nonimmobilized scoliosis. Its aim is to force the patient to straighten the spine in order to avoid the pressure of the apparatus. Schede has used this principle as well as others. The present general tendency pays great attention to functional corrections. He considers it as unjust that certain authors have denounced Schede as using their inventions.

Surgery of Uterine Cancer.—Thies had better results when he left the ovaries in the body than with the complete Wertheim operation. In so-called inoperable cancers, he reviews the field and makes an artificial anus in one operation, and later extirpates the sex organs with the rectum or bladder, when the putrid process stops.

Treatment of Puerperal Fever.—Kiehne's prognosis *quoad vitam* in puerperal fever is more than twice as good since he has been using injections of arsphenamin and mercuric chlorid.

Latent Febrile Herpes.—Bastai and Busacca inoculated the rabbit cornea with concentrated blood and cerebrospinal fluid from various patients. The cerebrospinal fluid produced the herpes keratitis in eighteen out of twenty-one cases, the blood in fourteen.

Virus of Herpes.—In 1910, Grüter produced dendritic keratitis in rabbits, with diluted vaccine lymph. Later he was able to transmit herpes infections. He found, as a rule, a less virulent virus in herpes zoster, a more virulent in febrile herpes. The herpes virus virulence increased after passage through a rabbit's brain.

Reduction of Incarcerated Hernia.—Krecke considers the operation as the normal treatment of incarcerated hernia. Reposition is allowed in large hernias with a broad ring if the incarceration has not lasted for more than an hour. Otherwise, it is contraindicated, especially with signs of inflammation, including great local pains. He makes an injection of 1 or 2 cg. of morphin from five to ten minutes before attempting the reduction. The patient's pelvis should be elevated, the thighs flexed. Catheterization is necessary in retention of urine. Local anesthesia with procain decreases the muscle tonus so that spontaneous reposition may occur. A warm bath is also quite helpful for relaxation. Local application of ether may decrease the volume of the incarcerated intestine. No great force and no finger tips should be used. Gurgling sounds announce the beginning of success.

Wiener klinische Wochenschrift, Vienna

37: 731-750 (July 24) 1924

*Localization of Sounds. S. Gatscher.—p. 731.
Bases of Protein Treatment. W. Weichardt.—p. 732. Conc'n.
*Lung Volume in Exophthalmic Goiter. H. Pollitzer.—p. 735.
Law of Conservation of Energy. E. Mester.—p. 740.
The Ear in the Course of Infectious Diseases. E. Urbantschitsch. Supplement, pp. 1-32.

Localization of Sounds.—Gatscher believes that the intensity theory—the oldest theory about localization of sounds in space—is correct. A subject with one ear closed localizes the sounds toward the open side. Deep (low) tones produced at the side of the closed ear are localized correctly, while high sounds cannot pass the obstacle as Kiedl found in registering experiments on a skull. Therefore they are localized on the opposite (open) side. The ears can distinguish two sounds reaching each of them separately if the interval is from 0.175 to 0.03 seconds. The theory that localization is due to the difference of time in which the sound reaches each ear cannot be right: The interval would be at the best 0.006 seconds in man and proportionately less in small animals.

Lung Volume in Exophthalmic Goiter.—Pollitzer found a decreased volume of lungs in chlorosis, between the attacks of chronic malaria, and in exophthalmic goiter. He considers his technic which he calls "chromopercussion" as best for determination of the borders of the lungs. The alleged dilatation of the right heart is very frequently only simulated by a retraction of the lung. He believes that a contraction of the pulmonary capillaries accounts for the diminished volume of the lungs.

37: 751-770 (July 31) 1924

Atherosclerosis. Schubert.—p. 751. Comment. Bartel.—p. 753.
Respiratory Gas Metabolism. P. Liebesny.—p. 754. Cont'd.
*Weil-Felix Reaction in Proteus Infection. C. Sonnenschein.—p. 757.
Theory of Oversensitiveness. K. Peyrer.—p. 760.
Diagnostic Tuberculin Ointments. F. Melion.—p. 764.
*"Reticulo-Endothelial Apparatus." Pfeiffer and Standenath.—p. 765.
Endometritis and Hypertrophic Condition of Uterus. L. Adler. Supplement, pp. 1-16.

Weil-Felix Reaction in Proteus Infection.—Sonnenschein observed a secondary proteus infection of an empyema in a child. The patient's serum did not agglutinate her own strain but was active up to a dilution of 1:200 with the Weil-Felix strains X_{19} and OX_{19}. Nevertheless, this was not a real typhus reaction, because the agglutinins remained unchanged after inactivating the serum. The characteristic reaction for typhus is limited to the active serum.

"Reticulo-Endothelial Apparatus."—Pfeiffer and Standenath find that the dispersion of ferrum saccharatum is subject to great changes. It is not suitable for subtle experiments.

Zentralblatt für Gynäkologie, Leipzig

48: 1569-1616 (July 19) 1924

Lipoids and Ovarian Function. R. Meyer.—p. 1570.
*Back Pains and Sacralization. H. Martius.—p. 1576.
Causes of Menstrual Pain. W. Schmitt.—p. 1583.
Conservation of an Accessory Cornu. P. Strassmann.—p. 1586.
Vaginal Hematoma in Pregnancy. E. Schulze.—p. 1591.
Gas Phlegmon in a Uterine Myoma. K. Heil.—p. 1595.
Construction of Vagina from Intestine. Bruskin.—p. 1597.

Back Pain and Sacralization.—Martius calls attention to a peculiar though rare source of very resistant back pains; namely, unilateral sacralization of the fifth lumbar vertebra. The French recommend for *"sacralisation douloureuse"* roentgen irradiation, which assumes a secondary inflammation. A tight-fitting corset might also be recommended. Garré resorted to operation in treating a colleague, with good results. Owing to the deep position of the abnormal bone formation, surgical intervention is difficult.

48: 1617-1680 (July 26) 1924

*Arthropathia Ovaripriva. C. Menge.—p. 1617.
*Intra-Uterine Implantation of Ovary. A. Mayer.—p. 1621.
Differentiation of Hemolytic Streptococci. G. Schwarz.—p. 1623.
Cultivation of Gonococcus from Women. Rother.—p. 1633.
Significance of Race in Gynecology. R. Knorr.—p. 1635.
Twenty-Five Years of Cesarean Sections. F. Mann.—p. 1639.
Genital Tumors Complicating Pregnancy. K. Burger.—p. 1651.
*Resection of Uterus at Abortions. Pfeilsticker.—p. 1657.

Joint Disturbances Probably from Ovarian Insufficiency.—Menge refers to the stiffness or pains or both in knee, shoulder or fingers which he has noticed in a number of cases of amenorrhea induced by roentgen exposures and also in the natural menopause. The arthropathy is usually symmetrical and persistent, but disappears in time without any treatment. He calls attention also to neuralgia ovaripriva.

Intra-Uterine Transplanting of Ovary.—In five cases recently, Mayer transplanted a segment of the woman's own ovary into the uterus in order to render conception possible in cases in which the tubes were diseased or had been resected. The implant was cast off in one case, but no untoward by-effects were evident in any instance.

Resection of Uterus in Abortion.—Pfeilsticker combated severe hemorrhage at abortion in fourteen cases by vaginal resection of the uterus.

Zentralblatt für innere Medizin, Leipzig

45: 569-584 (July 19) 1924

*Scarlet Fever. D. Herderschée.—p. 569.

Scarlet Fever.—Herderschée reports his experiences with over 6,900 scarlet fever patients. The mortality from it in Amsterdam was 4.8 per cent. in 1896 and 0.45 per cent. in 1912, without apparent causes for the difference. The peak of the morbidity in the fall was marked. Mongoloid idiocy and chickenpox predispose to it. A family predisposition to grave complications was frequently apparent. Scales from desquamation did not seem to be infectious, while purulent complications, such as otitis media, did. Paresthesias in the fingers and toes, and itching were frequent. He believes that the exanthem following burns is frequently of scarlatinal nature. Reddish edema occurs in the second stage in patients with arthritis or myocarditis.

45: 585-616 (July 26) 1924

*Chronic Partial Aneurysm of the Heart. A. Hanser.—p. 585.

Chronic Partial Aneurysm of the Heart.—Hanser believes in the possibility of diagnosis of a chronic partial aneurysm of the heart. It is due to lesions of the heart muscle from a, usually arteriosclerotic, affection of the coronary arteries. The transitory symptoms of pericarditis in persons with angina pectoris emphasized by M. Sternberg are not as important as the slight fever which follows attacks of angina pectoris. It is due to resorption of the necrotic muscle. Besides being possibly an indication of the formation of a partial aneurysm, it always has a serious prognosis with angina pectoris. He emphasizes the importance of measuring the temperature after such attacks.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 323-478 (July 19) 1924

*Congenitally Narrow Urethra. T. S. Klots.—p. 324.
Relation Between Iodin-Poor Food and Goiter. Jansen.—p. 348.
Changes in Pelvis in Perthes' Disease. Harrenstein.—p. 361.
Apparatus for Making Frozen Sections. B. S. Ten Berge.—p. 367.
*Injury of Eye from Ammonia. P. J. Waardenburg.—p. 372.
Recent Research on Heredity by Psychiatrists. A. Hutter.—p. 374.
Influence of Birth Month on Constitution. J. Sandera.—p. 409.

Blunders in Diagnosis of Pyelitis.—A male child, aged nearly 3, had been treated for five months for rebellious pyelitis before the physician heeded the history of pain and difficulty in micturition since birth and occasional abdominal pains and large abdomen. Then, on suspicion of some anatomic anomaly, a contrast suspension of potassium iodid was injected into the bladder. This revealed narrowing of the lumen in the posterior urethra, sufficient to account for the urinary disturbances. An eruption developed in a few days resembling measles or serum exanthem, with edema, and the child died from sudden anuria two days later. Klots queries whether the death was due to iodin poisoning from the 50 c.c. of 20 per cent. potassium iodid injected. Owing to the pathologic conditions in the kidneys this may have been the lethal factor although there was nothing to suggest iodin poisoning except the eruption. He compares with his case the similar ones on record.

Injury of the Eye from Ammonia.—Waardenburg calls attention to the extreme gravity of the damage when ammonia is spurted into the eye. Thies has recently described a case in which one eye had to be removed and cataract developed in the other. In Waardenburg's case, the eye, a year later, looks as if it had passed through central keratitis, and vision is almost entirely lost. He treated the eye at first by rinsing out with physiologic salt solution, and a petrolatum bandage. Later he succeeded in curing the erosions with scarlet red ointment, the young woman being still under treatment. He does not know of any effectual treatment for injury from ammonia; it seems to be more dangerous than corrosion with lime.

Casopis lekaruv ceskych, Prague

63: 1113-1140 (July 19) 1924

Orthopedic Affections with Spina Bifida Occulta. Schulz.—p. 1113.
Bacteriology of Ozena. K. Greif.—p. 1117. Cont'd.
Pharmacognosy of Drosera. S. Petlach.—p. 1121.
Congenital Elevation of Scapula. M. Havránek.—p. 1125.

63: 1141-1168 (July 26) 1924

*Bone Neoformation in Labyrinth. V. Tesar.—p. 1141. Conc'n, p. 1171.

63: 1169-1196 (Aug. 2) 1924

Case of Cysticercus. J. C. Ortynsky.—p. 1169.

Bone Neoformation in Labyrinth.—Tesar finds two types of new-formed bone in the labyrinth. In nonsuppurative processes, the bone remains spongy and never fills the endolymphatic space. Suppuration destroys the soft parts of the labyrinth and replaces them at last by compact bone tissue.

Acta Chirurgica Scandinavica, Stockholm

Supplement **5**: 1-242, 1924

*Orthopedic Studies on Spastic Infantile Hemiplegia. N. Silfverskiöld. p. 1.

Spastic Paralysis in Children.—Of all the methods of treating infantile spastic hemiplegia, Silfverskiöld thinks that only operations to lengthen tendons and muscles or resect motor nerves have stood the test of time, but even these require long training in first analytic and then synthetic functional exercises. He gives the orthopedic literature on the subject and full histories of fourteen carefully studied cases to show the possible restoration of the earning capacity. The course of treatment need not take more than four months. Both monographs are in German.

Supplement **6**: 1-280, 1924

*Staphylococcus Pyelitis. J. Hellström.—p. 1.

Staphylococcus Pyelitis.—Hellström appends a bibliography of 252 titles and discusses the chronic form of pyelitis in particular and especially the concretion formation for which the staphylococcus infection was evidently responsible. He found calculi in nine of the sixty cases. Acute staphylococcus pyelitis is generally mild; in his thirty cases the staphylococci disappeared completely in twenty-nine and probably in all. It is important in treatment to be sure that not only the staphylococcus but also mixed colon bacillus infection has subsided before dismissing the patient as cured. The chronic cases were extremely refractory. Operative measures seemed to have as good a prognosis as with aseptic calculi.

Hygiea, Stockholm

86: 385-416 (June 30) 1924

*Renal Tuberculosis. G. Ekehorn.—p. 386. Begun, p. 353.
Big Toe as Substitute for Thumb. A. Troell.—p. 407.

Exposure of Kidney Before Removing Tuberculous Mate.—Ekehorn gives the details of twenty-seven cases of tuberculosis of the kidney imposing nephrectomy in which conditions were so complicated and so far advanced that it was impossible to estimate the functional capacity of the other kidney without exploratory exposure. In twenty of the cases the second kidney was found dependable, and the contemplated nephrectomy was carried out with smooth recovery. The youngest in this group of twenty-seven was 8 years old, and twelve were under 20. Of the fifteen nephrectomized traced to date, six are in good health, free from pain and albuminuria, the intervals up to twelve years. He does not open the exposed kidney, but palpates it and the upper ureter as this shows tuberculous changes early, and he sutures the skin at once. The nephrectomy follows in the same sitting.